Critical Areas Report

Newport Way Improvements Project
Issaquah, Washington

for
KPG, Inc.

May 7, 2020

GeoEngineers
Earth Science + Technology

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Critical Areas Report

Newport Way Improvements Project
Issaquah, Washington

File No. 0252-039-01

May 7, 2020

Prepared for:

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1.0 INTRODUCTION

GeoEngineers, Inc. (GeoEngineers) was contracted by KPG, Inc. (KPG) to perform wetland and stream delineation services along Newport Way NW between State Route (SR) 900 and SE 54th Street, for the proposed Newport Way Improvements Project (project). The City of Issaquah (City) is planning road improvement actions along the approximate 1.1-mile stretch of road (project corridor). The improvements include, but are not limited to, road widening and culvert replacements. This report has been prepared to provide baseline wetland, stream and wildlife habitat information within the project corridor in accordance with City of Issaquah Municipal Code (IMC), Chapter 18.10 Environmental Protection.

1.1. Project Location

The project is located along Newport Way in Issaquah, Washington (Figure 1, Vicinity Map) and extends from approximately SR 900 to SE 54th Street. The proposed project is within Section 29 of Township 24 North, Range 06 East of the Willamette Meridian (W.M.). Newport Way is a two-lane asphalt roadway. Portions of Newport Way also include sidewalks and bike lane features. The surrounding vicinity largely consists of single- and multi-family residences with some businesses at the south end of the project area. The City is planning road improvement actions along the approximate 1.1-mile stretch of road.

1.2. Regulatory Requirements

This report was prepared to address critical areas review requirements as presented in IMC 18.10, which includes streams, wetlands and associated critical area buffers. The results are also equally applicable for documentation of baseline aquatic habitats necessary for State Environmental Policy Act (SEPA) review, National Environmental Policy Act (NEPA) review, state Hydraulic Project Approval (HPA), and/or federal Clean Water Act permitting requirements.

2.0 METHODS

Methods used to assess wetland, stream and wildlife habitats, occurring within or adjacent to the project corridor, included a review of published data and literature, as well as field assessment activities, as described in more detail in the following sections. The Area of Investigation defined for this effort included up to 100 feet on either side of the road right-of-way (ROW), with the exception of parcels for which right-of-entry (ROE) had not been granted at the time of our fieldwork, as illustrated on Figure 2, Area of Investigation.

2.1. Data Review

GeoEngineers first researched existing information on wetlands and streams documented within the project area vicinity both within and beyond the Area of Investigation. Our search for pertinent and applicable data and maps consisted of a review of the following information sources.

- **Public Databases:**
  - Washington Department of Fish and Wildlife (WDFW) Priority Habitat and Species (PHS) database (WDFW 2017a);

- United States Fish and Wildlife Service (USFWS) National Wetlands Inventory (NWI) maps (USFWS 2017a);
- USFWS 2017 List of Threatened and Endangered Species (USFWS 2017b)
- United States Department of Agriculture – National Resource Conservation Service (USDA-NRCS) Web Soil Survey (USDA-NRCS 2017a);
- Washington State Department of Natural Resources (WDNR) Forest Practices Application Review System (FPARS) (WDNR 2017); and
- WDFW SalmonScape mapping application (WDFW 2017b).

- **Prior Studies:**
  - City of Issaquah GIS Data Viewer (City of Issaquah 2017a).
  - Gateway Apartments - Critical Areas Study and Final Mitigation Plan (Talasaea 2016).
  - Bergsma Culvert Survey (CEC 2016; PACE 2016).

Mapped data reports available from WDFW, USFWS, and USDA-NRCS are included in Appendix A, Data Review Sources.

2.1.1. Wetland and Stream Data

The USFWS NWI online mapper (USFWS 2017a) does not show any mapped wetlands within the project area (Appendix A).

The WDNR FPARS map (WDNR 2017) depicts four streams crossing the project corridor: Tibbetts Creek, Anti-Aircraft Creek, Schneider Creek and one unnamed stream depicted as a tributary to Anti-Aircraft Creek that is not consistent with any other mapped data sources nor our field observations. Tibbetts Creek flows north, crossing the project near its eastern terminus, and eventually flowing into Lake Sammamish. Schneider Creek crosses the project corridor near the northwestern terminus and eventually flows into Lake Sammamish. According to WDNR FPARS, Schneider Creek, Tibbetts Creek and Anti-Aircraft Creek are all considered fish bearing streams (Type F), and the unnamed stream is non-fish bearing (Type N) (WDNR 2017). SalmonScape has documented fish use within Tibbetts Creek by winter steelhead, kokanee, coho, and sockeye (WDFW 2017b). Additional WDFW SalmonScape data maps Anti-Aircraft Creek as having modeled distribution of winter steelhead, coho, sockeye and fall Chinook (WDFW 2017b).

City of Issaquah GIS Data Viewer (City of Issaquah 2017a) depicts three additional streams crossing the project corridor that are not mapped by WDNR FPARS or WDFW data. These additional streams are identified as 0169G, 0169I and 0169H. According to the City, these streams are all "Class 2 Streams with Salmonids" (2017). The stream hydrography dataset obtained from the City is depicted on Figure 2.

We also evaluated mapped wildlife habitats, which may be regulated under the IMC, to the extent they occur within protective stream and wetland buffers (IMC 18.10.360 B) and may also need to be documented as part of the NEPA/SEPA review processes. There are no priority wildlife habitats mapped within the project corridor and most habitats are outside of the Area of Investigation; the nearest priority wildlife habitats occur within Cougar Mountain Regional Wildland Park, which is located southwest of Newport Way. WDFW PHS maps this entire park area as a "Biodiversity Areas and Corridor" (WDFW 2017a). Within this park, WDFW PHS maps communal roosting habitat for Yuma myotis (*Myotis yumanensis*), Townsend's big-eared bat (*Corynorhinus townsendii*), and little brown bat (*Myotis lucifugus*)

(WDFW 2017a). There is an area of communal roosting habitat for these same bat species over 100 feet north of the project corridor and outside the Area of Investigation.

2.1.2. Soil Survey

The USDA-NRCS Web Soil Survey indicates six soil types within the project area (USDA-NRCS 2017a). Appendix A shows mapped soils within the project area. These mapped soil types are:

- Alderwood and Kitsap soils, very steep – not hydric but may contain hydric inclusions
- Everett very gravelly sandy loam, 8 to 15 percent slopes – not hydric and does not contain hydric inclusions
- Everett very gravelly sandy loam, 15 to 30 percent slopes – not hydric but may contain hydric inclusions
- Kitsap silt loam, 2 to 8 percent slopes – hydric
- Mixed alluvial land – not hydric and does not contain hydric inclusions
- Sammamish silt loam– hydric

Kitsap silt loam, 2 to 8 percent slopes and Sammamish silt loam are listed on the national hydric soils list (USDA-NRCS 2017b). Alderwood and Kitsap soils, very steep, Everett very gravelly sandy loam, 15 to 30 percent slopes are not hydric but may contain hydric inclusions (USDA-NRCS 2017b). Everett very gravelly sandy loam, 8 to 15 percent slopes, and mixed alluvial are not hydric and contain no hydric inclusions (USDA-NRCS 2017b).

2.2. Literature Review

2.2.1. Gateway Apartments – Previous Critical Areas Study and Final Mitigation Plan

The Gateway site is adjacent to Newport Way and at the time of the survey was undergoing extensive construction activities. We were granted ROE at the site and evaluated the remaining habitat within the area of investigation. Prior to construction, a Critical Areas Study and Final Mitigation Plan was developed for the Gateway project (Talasaea 2016). All proposed mitigation actions are outside of the Newport Way project area but are related to enhancement of Schneider Creek, its associated buffer and adjacent wetlands, as well as Tibbett's Creek and associated wetlands and buffers.

2.2.2. Riva Townhomes Site Plans

The Riva site includes one large parcel located on the east side of Newport way, across from the intersection with NW Oakcrest Drive (Figure 2). A review of the site plans prepared by Core Design (2015) indicates two stream features within this parcel. Anti-Aircraft Creek, which is located towards the northwest limits of the Riva property, has been recently relocated from its original channel into a new, more direct crossing of Newport Way (PBS 2017). The road crossing of Anti-Aircraft Creek was completed by the City as a separate project as part of the Riva Townhomes development agreement. The original stream channel was abandoned and converted to a storm drainage easement, and a new channel constructed at the replacement road crossing. This project has been completed separately from the Newport Way project but was designed to accommodate the new road section. A second stream, unnamed (identified as 0169H), is located on the southern portion of the Riva property, has been identified as Type F, and requires a culvert extension to accommodate frontage improvements, which is currently in construction by the Riva developers.

2.2.3. Former Bergsma Subdivision – Previous Culvert Survey

The former Bergsma site, now owned by City of Issaquah, is located on the southwest side of Newport Way in the southeastern portion of the project corridor near the intersection with SR 900 (Figure 2). The upstream portion of two mapped streams (City of Issaquah 2017a), 0169G and 0169I, are within these parcels. The Bergsma owners were previously in the process of developing plans for a subdivision development at these parcels. As part of this work, they had developed preliminary stream ordinary high water mark (OHWM) delineation and site survey associated with this proposed development and had initiated dialog with regulatory agencies.

Based on an email exchange from June 2016, WDFW visited these parcels and supported the designation of 0169G as fish-bearing but indicated that further slope information was needed to determine the accessibility and designation of 0169I (Peace 2016). In August 2016, Confluence Environmental Company (CEC) characterized the slope of 0169I as greater than 16 percent (CEC 2016).

2.3. Field Methods

GeoEngineers' biologists completed critical area site investigations on: October 10 and 30, 2017; May 3, 2018; and July 2, 2019. GeoEngineers field investigation was limited to the project footprint as defined by KPG drawings as well as extending up to 100 feet into adjacent areas where ROEs have been obtained. One property (Riva) was unable to be assessed directly because ROE was denied (Figure 2). In this case, over-the-fence observations were made from the adjacent road ROW onto the adjacent private parcels and existing data provided in developer drawings were referenced in lieu of direct OHWM delineation.

2.3.1. Wetland Assessment

Delineation of aquatic critical areas (wetlands and streams) was conducted in accordance with guidelines presented in IMC Chapter 18.10 (Environmental Protection) and using the *United States Army Corps of Engineers (USACE) Wetlands Delineation Manual* (Environmental Laboratory 1987) and the *Regional Supplement to the USACE Wetland Delineation Manual: Western Mountains, Valleys, and Coast Region* (USACE 2010).

Potential wetland areas were evaluated based upon three parameters: (1) hydrophytic vegetation (USACE 2016); (2) hydric soils (USDA–NRCS 2017b); and (3) wetland hydrology (Ecology 1997). The presence of all three parameters may result in a jurisdictional wetland. Wetlands are rated using the Washington State Wetland Rating System for Western Washington (Hruby 2014).

2.3.2. Stream Assessment

The OHWM is used to define the jurisdictional boundary of streams and rivers according to the Clean Water Act, Washington State Growth Management Act, Washington State Shoreline Management Act and local critical areas ordinances. Methods used to identify the OHWM were consistent with local, state and federal protocols, including Regulatory Guidance Letter No. 05-05 (USACE 2005) and the Washington State manual *Determining the Ordinary High Water Mark on Streams in Washington State* (Olson and Stockdale 2016). We also referenced the Washington Administrative Code (WAC) for the definition of OHWM (WAC 173-22-030 § 11). Stream rating and identification of the buffer width was conducted in accordance with guidelines presented in IMC 18.10.785.

The OHWM of streams were evaluated using direct field observation by examining breaks in the topography, drift lines, shifts in vegetation and signs of water marks, according to USACE protocol as referenced from Regulatory Guidance Letter (No. 05-05), Ordinary High Water Mark Identification, December 7, 2005. Where ROE was not provided, as well as for the recently constructed stream channel at Anti-Aircraft Creek, which did not exhibit OHWM indicators, GeoEngineers referenced the developer drawings, which included OHWM delineations conducted by others, and confirmed general accuracy of these delineations as observed from the ROW in lieu of field delineation. On the former Bergsma site, now owned by the City of Issaquah, GeoEngineers also obtained the OHWM delineations completed by the developer and field-verified the accuracy of these data.

Streams within the City are rated following the rating system outlined in IMC Chapter 18.10.780. These ratings differ from the WDNR water typing classifications. Table 1 compares these two stream rating systems. This report will reference both methods.

TABLE 1. STREAM RATING SYSTEMS

City of Issaquah Stream Rating System	DNR Water Typing Classification
Class 1	Type S
Class 2 With Salmonids	Type F
Class 2 Streams	Type F
Class 3 Streams	Type Ns
Class 4 Streams	Type Ns

2.3.3. Fish and Wildlife Habitat

Fish and wildlife species presence and habitat use of the project corridor was evaluated through a review of available literature as well as general field observations. Sources of literature consulted prior to the field investigation included possible wildlife habitat relationships as documented by the USFWS endangered and threatened species list for the project location (USFWS 2017b) and the WDFW PHS map data (WDFW 2017a). We focused primarily on the PHS data to identify if regulated wildlife species or habitat conservation areas exist on or adjacent to the property. The focus of this evaluation was to document potential wildlife habitat and to make direct observations of physical habitat features (snags, nests, burrows, trails, dens, etc.). Fish and wildlife habitat areas were assessed according to IMC.

3.0 FINDINGS

We identified and mapped wetland habitat, stream habitat, fish and wildlife habitat, and stormwater features within the area of investigation during our field assessment. Additional data was obtained from developer drawings, particularly where ROE was not provided (Figure 2). A total of one offsite wetland (Wetland A) and six jurisdictional streams (Tibbetts Creek, 0169G, 0169H, 0169I, Anti-Aircraft Creek and Schneider Creek) were identified within the project corridor. Photographs of these features are included as Appendix B, Site Photographs. Critical areas are shown on Figure 3 through 5, Critical Area Results.

A photographic record was collected during the field visit to document existing site conditions. Representative photos have been included in Appendix B.

3.1. Wetlands

We delineated the jurisdictional wetland boundary for one wetland (Wetland A) adjacent to the project corridor. This wetland is associated with Tibbetts Creek and is outside the project corridor but parallel to the road through the southeastern portion of the project and partially within the Area of Investigation. Six formal data sample plots were established to make wetland identifications (Appendix C, Sample Plot Data Form). The wetland boundary was subsequently surveyed by KPG as depicted on Figures 4 and 5. We rated the wetland using the Washington State Wetland Rating System for Western Washington (Hruby 2014) as specified in IMC Chapter 18.10.029 (Wetland identification and functional rating). Appendix D, Wetland Rating Form includes the wetland rating form. A complete summary of wetland information and description of Wetland A is included in Appendix E, Wetland and Stream Descriptions.

Wetland A was identified as a Category II wetland based on the current rating system (Hruby 2014). Based on current regulatory code (IMC 18.10.640), a Category II wetland receives a 100-foot standard buffer. The standard buffer width can be decreased to 75 feet, when conditions are met as described in IMC 18.10.650.

3.2. Stream Delineation

GeoEngineers identified six streams within the project area: Tibbetts Creek, 0169G, 0169H, 0169I, Anti-Aircraft Creek and Schneider Creek. The streams 0169G, 0169H and 0169I are not mapped by WDNR, but are identified by the City (City of Issaquah 2017). Tibbetts Creek, the downstream sections of 0169G and 0169I, the upstream section of 0169H, and Schneider Creek were delineated during the field investigation and the resulting OHWM limits are shown on Figures 3 through 5. OHWM delineations of the upstream sections of 0169G and 0169I that were completed by others and provided in developer drawings were field-verified by GeoEngineers during a detailed stream reconnaissance as depicted on Figures 3 through 5. The downstream section of 0169H was also obtained from developer drawings for the Riva parcel (PACE 2016) and was field-verified from the ROW. Upstream and downstream sections of Anti-Aircraft Creek, which has been recently reconstructed, were obtained from the design plans for the replacement crossing since reliable field indicators have not developed since construction.

The City maps Tibbetts Creek, 0169G, 0169H, 0169I, Anti-Aircraft Creek and Schneider Creek as Class 2 Streams with Salmonids. However, based on our field assessment (GeoEngineers 2019), Stream 0169I contains intermittent, seasonal flow and does not contain salmonid habitat, indicating it would be more appropriately classified as Class 3 Streams according to IMC 18.10.780. This classification was confirmed by WDFW (Miles Penk, pers. comm. 2019). IMC 18.10.785(C) indicates a required standard vegetation buffer of 100 feet for Class 2 streams and 50 feet for Class 3 streams. Recommended buffer widths for each stream are shown on Figure 3. A summary of relevant stream information and general description of each stream are provided in Appendix E.

3.3. Stormwater Features

During the field investigation several stormwater features, that included stormwater pond, ditches, swales and culverts were identified. These features did not meet the criteria for wetland or stream habitat and were not delineated. The roadside ditches throughout the project corridor were in good condition. The old stream bed of Anti-Aircraft Creek (shown on Figure 4) has been converted to a storm drain easement for the adjacent roadway.

3.4. Fish and Wildlife Habitat

We did not observe any wildlife habitat, including no existing nest sites of any sensitive bird species, within the project corridor during our field work.

4.0 SUMMARY

This Critical Areas Report has been prepared for KPG on the behalf of the City of Issaquah for the proposed Newport Way Improvement Project. The objective of this report is to provide critical area baseline information for use during design and permitting for the project.

One offsite wetland (Wetland A) and six streams (Tibbetts, 0169G, 0169H, 0169I, Anti-Aircraft and Schneider) were identified during the field investigation. Wetland A is a Category II wetland and requires a 100-foot buffer due to a habitat score of 9. Tibbetts, 0169G, 0169H, Anti-Aircraft and Schneider Creek are all mapped by the City as Class 2 Stream with Salmonids (Type F) that will require a 100-foot buffer. Stream 0169I has been reviewed for potential fish utilization and concurrence has been obtained from WDFW that it is non-fish-bearing. Therefore, Stream 0169I is classified as Class 3 (Type Ns) and requires a 50-foot buffer. The buffers for the wetland and streams are identified below in Table 2. After project designs are finalized, potential wetland and buffer impacts should be assessed and, if needed, avoidance, minimization and mitigation options should be evaluated. If potential wetland and/or stream impacts are identified, a Mitigation Plan and other development permits may be required.

TABLE 2. CRITICAL AREAS SUMMARY

Wetland/ Stream ID	Category/Type	Buffer (feet)
Wetland A	Category II	100[1]
Tibbetts Creek	Type F/Class 2 with Salmonids	100[2]
0169G	Type F/Class 2 with Salmonids	100[2]
0169H	Type F/Class 2 with Salmonids	100[2]
0169I	Type Ns/Class 3	50[2]
Anti-Aircraft Creek	Type F/Class 2 with Salmonids	100[2]
Schneider Creek	Type F/Class 2 with Salmonids	100[2]

Notes:

1. Standard buffer based on IMC 18.10.640
2. Standard buffer based on IMC 18.10.785

5.0 LIMITATIONS

GeoEngineers has prepared this Critical Areas Report in general accordance with the scope and limitations of our proposal. Within the limitations of scope, schedule and budget, our services have been executed in accordance with the generally accepted practices for wetland and stream delineation in this area at the time this report was prepared. No warranty or other conditions, express or implied, should be understood.

This report has been prepared for the exclusive use of the KPG, Inc., authorized agents and regulatory agencies following the described methods and information available at the time of the work. No other party

may rely on the product of our services unless we agree in advance to such reliance in writing. The information contained herein should not be applied for any purpose or project except the one originally contemplated.

The applicant is advised to contact all appropriate regulatory agencies (local, state and federal) prior to design or construction of any development to obtain necessary permits and approvals.

6.0 REFERENCES

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FIGURES

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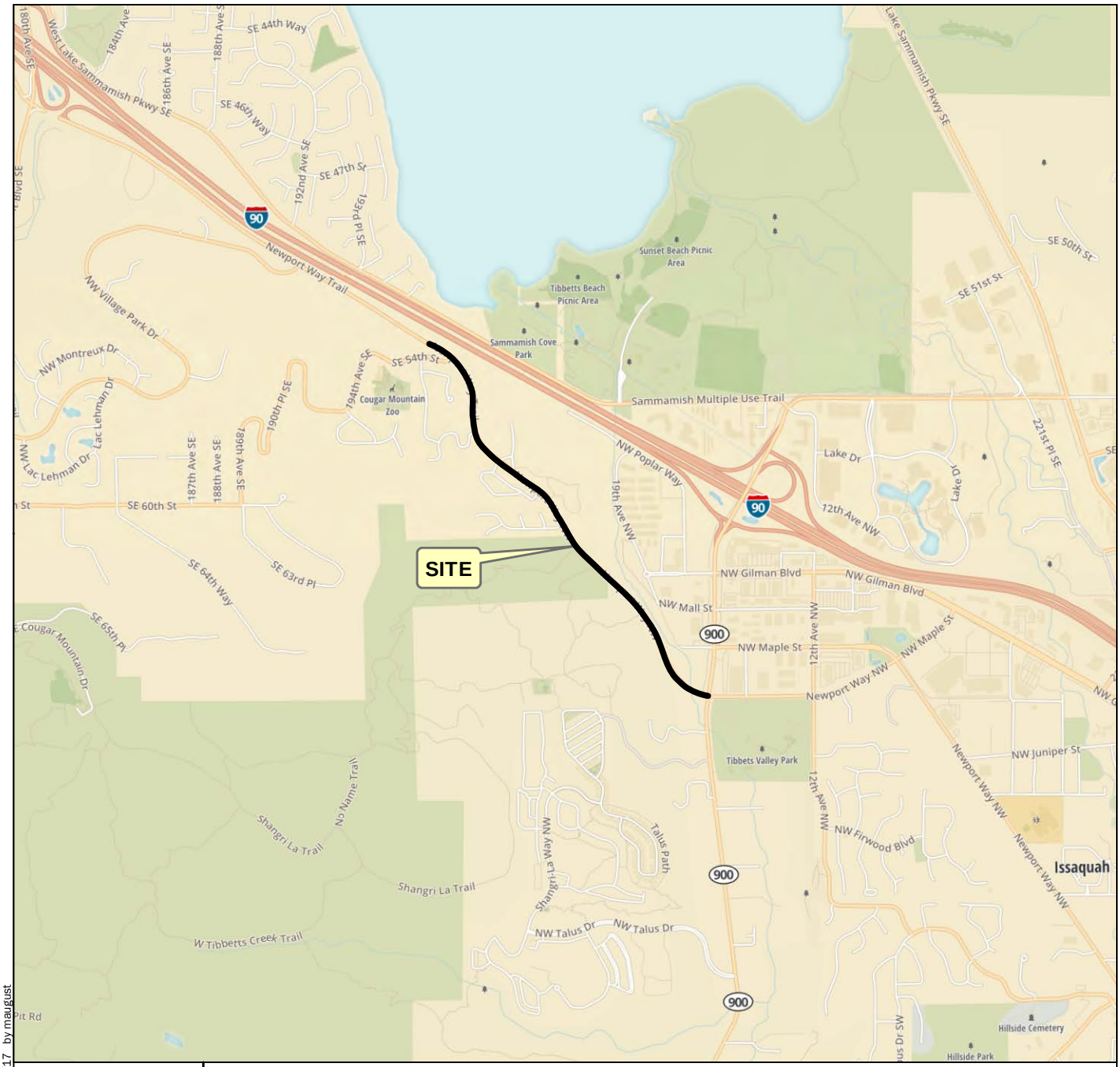

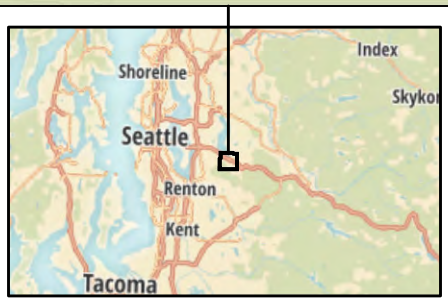

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Feet

Notes:

1. The locations of all features shown are approximate.
2. This drawing is for information purposes. It is intended to assist in showing features discussed in an attached document. GeoEngineers, Inc. cannot guarantee the accuracy and content of electronic files. The master file is stored by GeoEngineers, Inc. and will serve as the official record of this communication.

Data Source: Mapbox Open Street Map, 2017

Projection: NAD 1983 UTM Zone 10N

Vicinity Map

Newport Way Improvements Project
Issaquah, Washington

GeoEngineers

Figure 1

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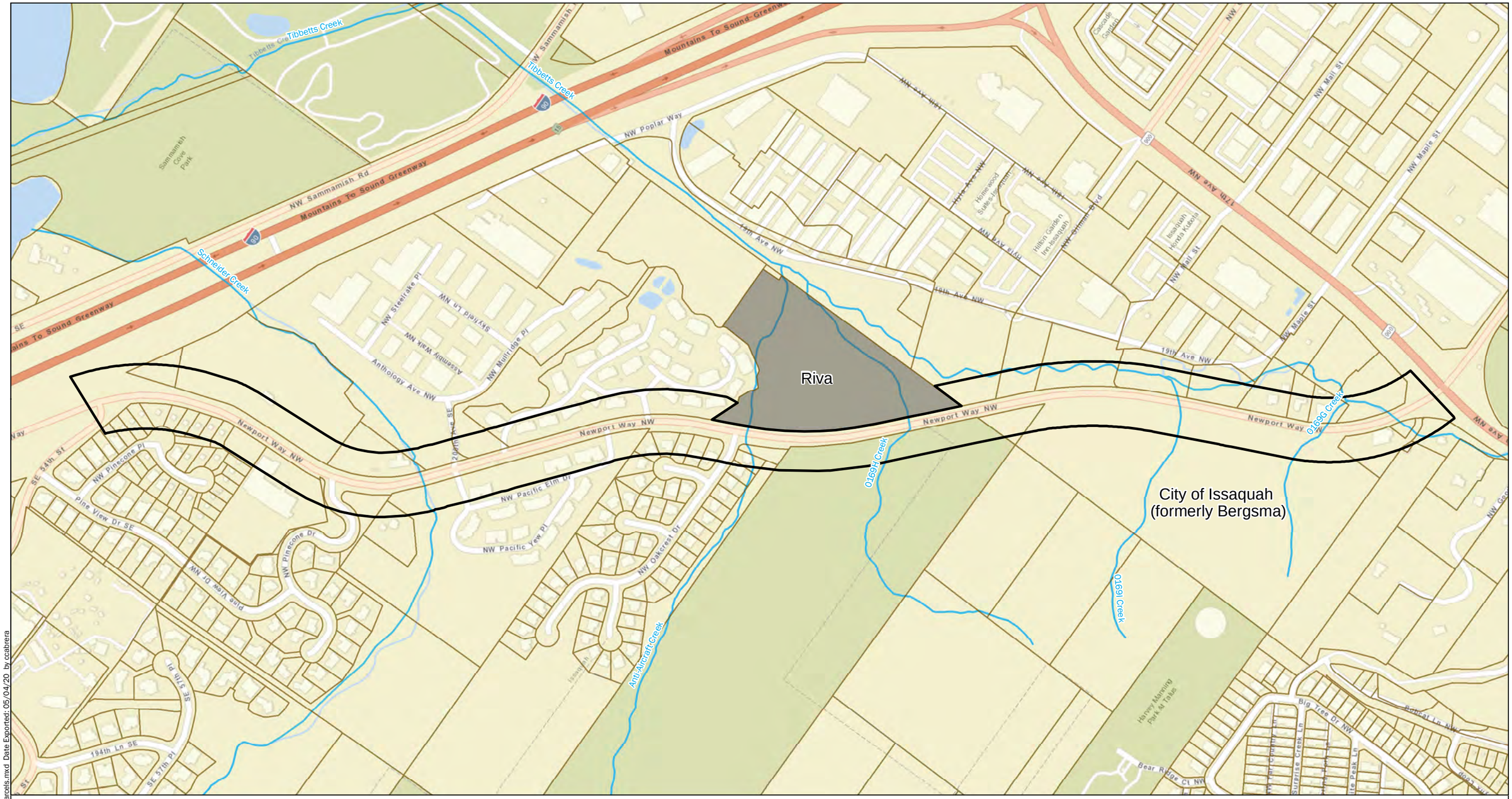

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Data Source: King County GIS, ESRI

Projection: NAD 1983 StatePlane Washington North FIPS 4601 Feet

Legend

- King County Tax Parcel
- No Right of Entry
- Area of Investigation
- King County Mapped Stream

400 0 400

Feet

Area of Investigation

Newport Way Improvements Project
Issaquah, Washington

GeoEngineers

Figure 2

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Data Source: King County GIS, ESRI, 2020 Survey

Projection: NAD 1983 StatePlane Washington North FIPS 4601 Feet

Legend

- SP-1 — Wetland Sample Plot Locations
- Area of Investigation
- No Right of Entry
- Wetland
- Wetland Buffer 100 ft
- Survey Wetland Edge
- Approximate Wetland Edge
- City of Issaquah Mapped Stream
- Stream Based on Survey
- Stream Bed - As Built
- Culvert Limits or Storm Drain Centerlines
- Stream Ordinary High Water Mark - Field Survey
- Stream Ordinary High Water Mark - LiDAR
- Stream Ordinary High Water Mark - Private Developer
- Stream Buffer

150 0 150

Feet

Critical Area Results

Newport Way Improvements Project
Issaquah, Washington

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Figure 3

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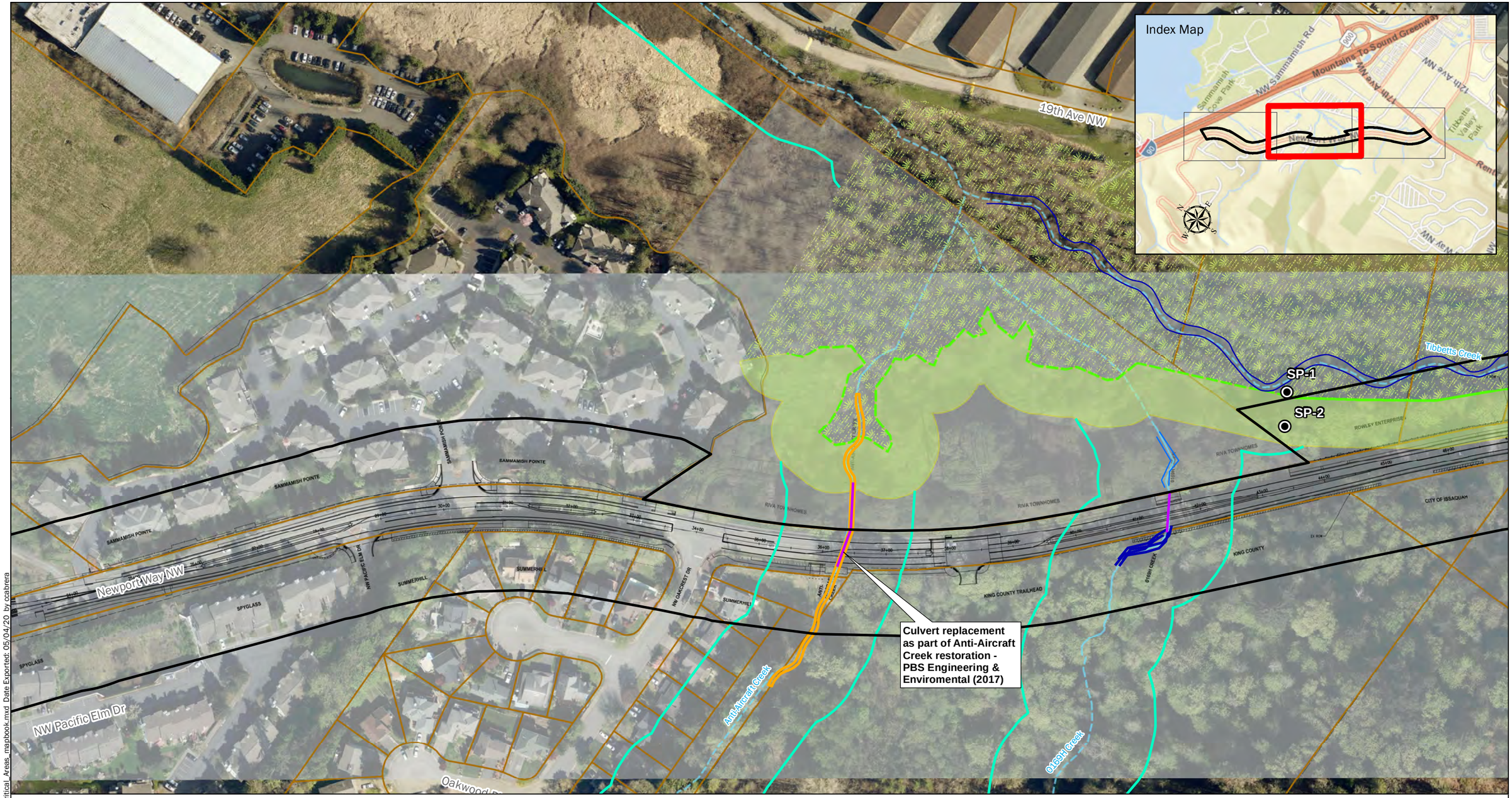

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Data Source: King County GIS, ESRI, 2020 Survey

Projection: NAD 1983 StatePlane Washington North FIPS 4601 Feet

Legend

- SP-1 Wetland Sample Plot Locations
- Area of Investigation
- No Right of Entry
- Wetland
- Wetland Buffer 100 ft
- Survey Wetland Edge
- Approximate Wetland Edge
- City of Issaquah Mapped Stream
- Stream Based on Survey
- Stream Bed - As Built
- Culvert Limits or Storm Drain Centerlines
- Stream Ordinary High Water Mark - Field Survey
- Stream Ordinary High Water Mark - LiDAR
- Stream Ordinary High Water Mark - Private Developer
- Stream Buffer

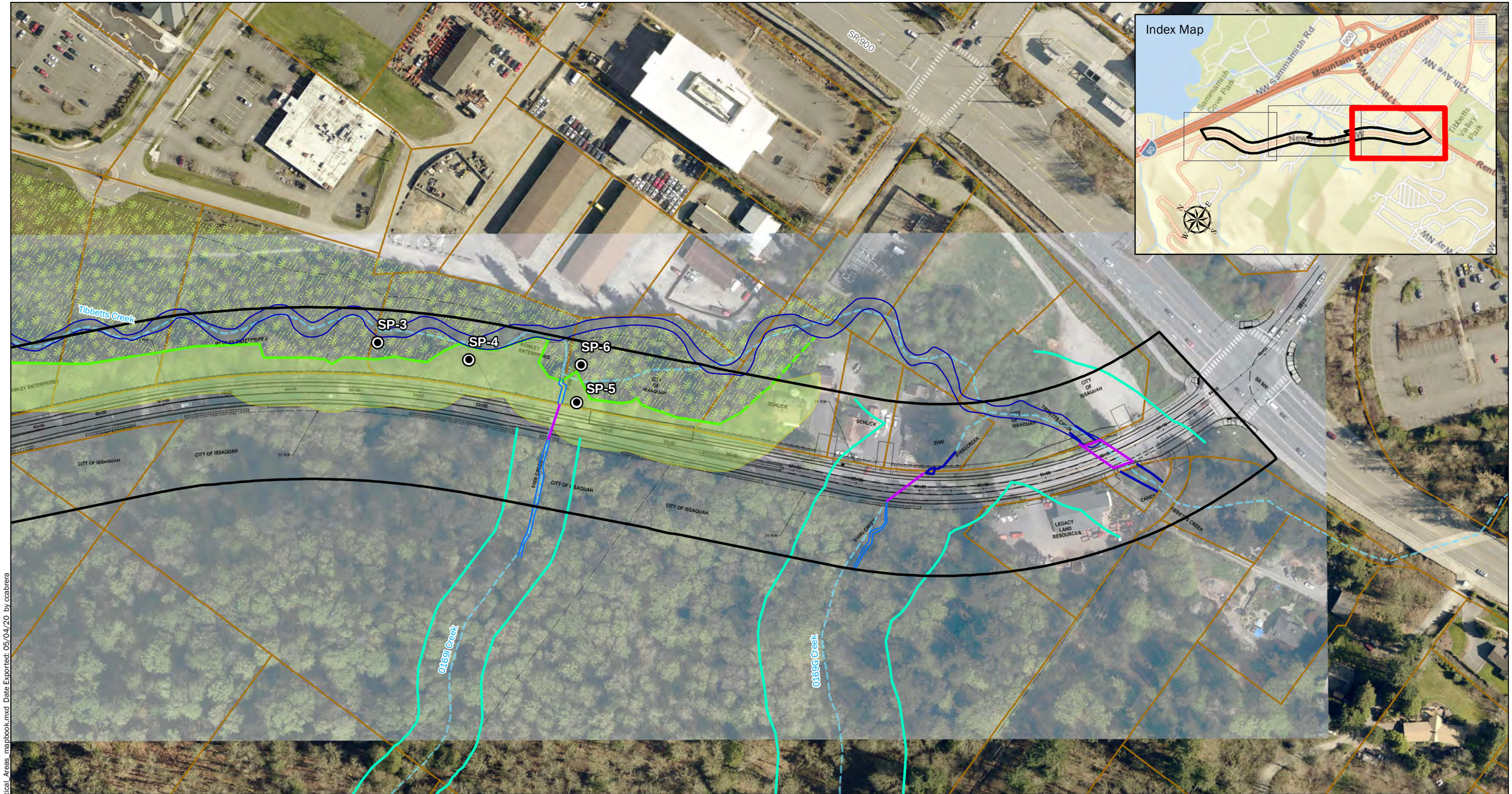
150 0 150
Feet

Critical Area Results

Newport Way Improvements Project
Issaquah, Washington

GeoEngineers

Figure 4



Notes:

1. The locations of all features shown are approximate.
2. This drawing is for information purposes. It is intended to assist in showing features discussed in an attached document. GeoEngineers, Inc. cannot guarantee the accuracy and content of electronic files. The master file is stored by GeoEngineers, Inc. and will serve as the official record of this communication.

Data Source: King County GIS, ESRI, 2020 Survey

Projection: NAD 1983 StatePlane Washington North FIPS 4601 Feet

Legend

- SP-1 Wetland Sample Plot Locations
- Area of Investigation
- No Right of Entry
- Wetland
- Wetland Buffer 100 ft
- Survey Wetland Edge
- Approximate Wetland Edge
- City of Issaquah Mapped Stream
- Stream Based on Survey
- Stream Bed - As Built
- Culvert Limits or Storm Drain Centerlines
- Stream Ordinary High Water Mark - Field Survey
- Stream Ordinary High Water Mark - LiDAR
- Stream Ordinary High Water Mark - Private Developer
- Stream Buffer

N W E S

150 0 150

Feet

Critical Area Results

Newport Way Improvements Project
Issaquah, Washington

GeoEngineers

Figure 5

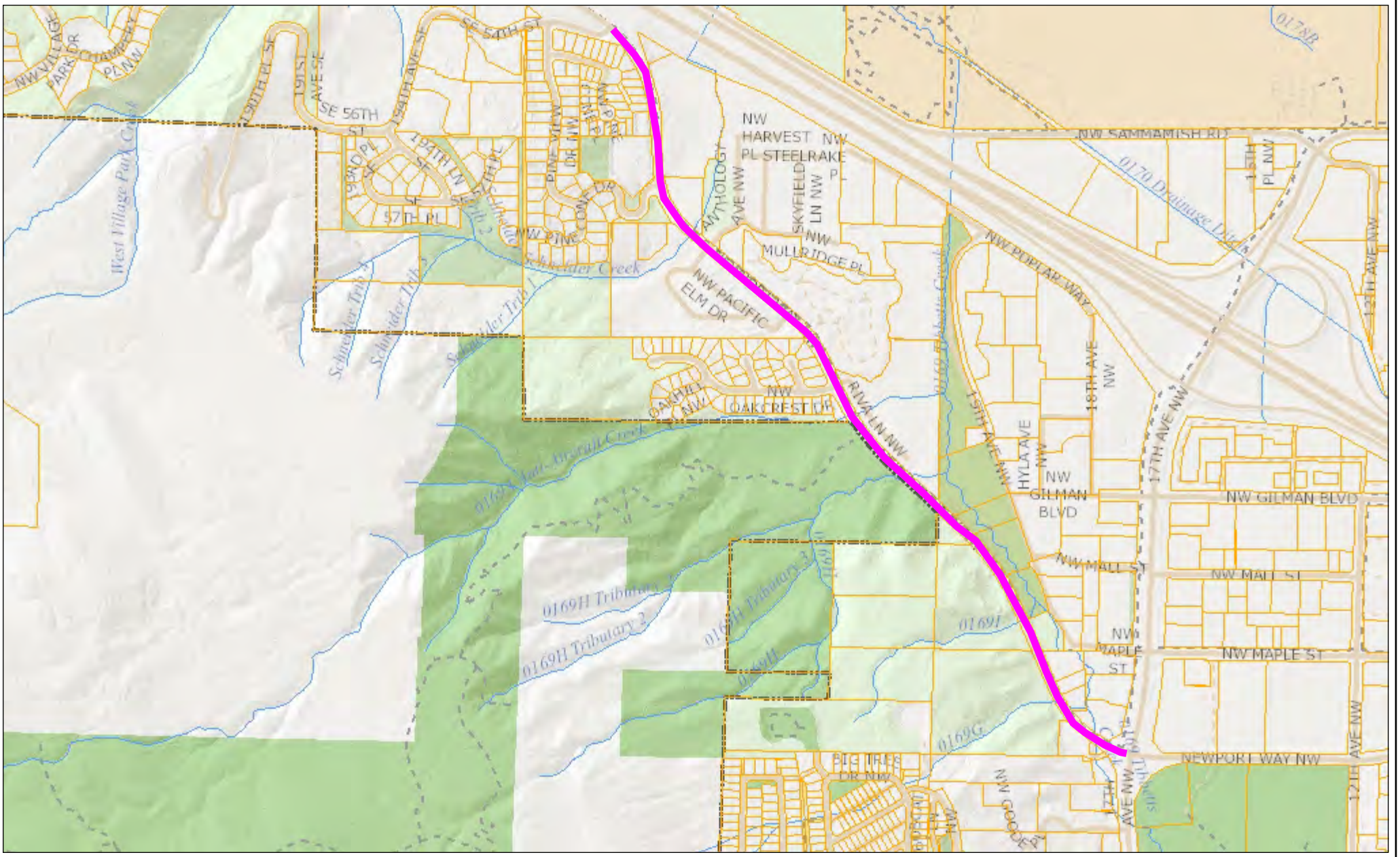
P:\0\02520391\GIS\MXD\025203900_F03_Critical_Areas_mapbook.mxd Date Exported: 05/04/20 by ccabrera

APPENDICES

GeoEngineers

APPENDIX A
Data Review Sources

Newport Way Improvements Project



1,641.8 0 820.92 1,641.8 Feet

1: 9,851

City of Issaquah, WA GIS

U.S. Fish and Wildlife Service
National Wetlands Inventory

Newport Way Improvements Project

December 18, 2017 Data current as of May 4, 2020

Wetlands

- Estuarine and Marine Deepwater
- Estuarine and Marine Wetland
- Freshwater Emergent Wetland
- Freshwater Forested/Shrub Wetland
- Freshwater Pond
- Lake
- Other
- Riverine

This map is for general reference only. The US Fish and Wildlife Service is not responsible for the accuracy or currentness of the base data shown on this map. All wetlands related data should be used in accordance with the layer metadata found on the Wetlands Mapper web site.

National Wetlands Inventory (NWI)
This page was produced by the NWI mapper

WASHINGTON DEPARTMENT OF FISH AND WILDLIFE
PRIORITY HABITATS AND SPECIES REPORT

SOURCE DATASET: PHSPlusPublic Query ID: P200504152241
REPORT DATE: 05/04/2020 3.23

Common Name / Scientific Name / Notes	Site Name / Source Dataset / Source Record / Source Date	Priority Area / Occurrence Type / More Information (URL) / Mgmt Recommendations	Accuracy	Federal Status / State Status / PHS Listing Status	Sensitive Data / Resolution	Source Entity / Geometry Type
Big brown bat Eptesicus fuscus	 WS_OccurPoint 145195 March 07, 2011	Communal Roost Biotic detection http://wdfw.wa.gov/publications/pub.php?	GPS	N/A N/A PHS LISTED	Y TOWNSHIP	WA Dept. of Fish and Wildlife Points
Biodiversity Areas And	KING COUNTY (EASTSIDE) PHSREGION 902805	Terrestrial Habitat N/A http://wdfw.wa.gov/publications/pub.php?	1/4 mile (Quarter	N/A N/A PHS LISTED	N AS MAPPED	WA Dept. of Fish and Wildlife Polygons
Coho Oncorhynchus kisutch	Tibbetts Creek SWIFD 28259	Breeding Area Breeding area http://wdfw.wa.gov/wlm/diversty/soc/soc.htm	NA	N/A N/A PHS LISTED	N AS MAPPED	 Lines
Coho Oncorhynchus kisutch	Tibbetts Creek SASI 3120	Occurrence Occurrence http://wdfw.wa.gov/wlm/diversty/soc/soc.htm	NA	Candidate N/A PHS Listed	N AS MAPPED	WDFW Fish Program Lines
Freshwater Emergent	N/A NWIWetlands	Aquatic Habitat Aquatic habitat http://www.ecy.wa.	NA	N/A N/A PHS Listed	N AS MAPPED	US Fish and Wildlife Service Polygons
Freshwater Forested/Shrub	N/A NWIWetlands	Aquatic Habitat Aquatic habitat http://www.ecy.wa.	NA	N/A N/A PHS Listed	N AS MAPPED	US Fish and Wildlife Service Polygons
Freshwater Forested/Shrub	N/A NWIWetlands	Aquatic Habitat Aquatic habitat http://www.ecy.wa.	NA	N/A N/A PHS Listed	N AS MAPPED	US Fish and Wildlife Service Polygons

Common Name Scientific Name Notes	Site Name Source Dataset Source Record Source Date	Priority Area Occurrence Type More Information (URL) Mgmt Recommendations	Accuracy	Federal Status State Status PHS Listing Status	Sensitive Data Resolution	Source Entity Geometry Type
Kokanee Oncorhynchus nerka	Tibbetts Creek SWIFD 28262	Occurrence/Migration Occurrence/migration http://wdfw.wa.gov/wlm/diversty/soc/soc.htm	NA	N/A N/A PHS LISTED	N AS MAPPED	 Lines
Little Brown Bat Myotis lucifugus	WS_OccurPoint 145125 July 10, 2017	Breeding Area Biotic detection http://wdfw.wa.gov/publications/pub.php?	GPS	N/A N/A PHS LISTED	Y TOWNSHIP	WA Dept. of Fish and Wildlife Points
Little Brown Bat Myotis lucifugus	WS_OccurPoint 148355 June 20, 2018	Breeding Area Biotic detection http://wdfw.wa.gov/publications/pub.php?	GPS	N/A N/A PHS LISTED	Y TOWNSHIP	WA Dept. of Fish and Wildlife Points
Resident Coastal Cutthroat Oncorhynchus clarki	Tibbetts Creek SWIFD 28256	Occurrence/Migration Occurrence/migration http://wdfw.wa.gov/wlm/diversty/soc/soc.htm	NA	N/A N/A PHS LISTED	N AS MAPPED	 Lines
Sockeye Oncorhynchus nerka	Tibbetts Creek SWIFD 28263	Occurrence/Migration Occurrence/migration http://wdfw.wa.gov/wlm/diversty/soc/soc.htm	NA	N/A N/A PHS LISTED	N AS MAPPED	 Lines
Sockeye Oncorhynchus nerka	Tibbetts Creek SASI 5200	Occurrence Occurrence http://wdfw.wa.gov/wlm/diversty/soc/soc.htm	NA	Not Warranted N/A PHS Listed	N AS MAPPED	WDFW Fish Program Lines
Steelhead Oncorhynchus mykiss	Tibbetts Creek SASI 6154	Occurrence Occurrence http://wdfw.wa.gov/wlm/diversty/soc/soc.htm	NA	Threatened N/A PHS Listed	N AS MAPPED	WDFW Fish Program Lines
Townsend's Big-eared Bat Corynorhinus townsendii	WS_OccurPoint 109377 March 07, 2011	Communal Roost Biotic detection http://wdfw.wa.gov/publications/pub.php?	GPS	N/A Candidate PHS LISTED	Y TOWNSHIP	WA Dept. of Fish and Wildlife Points

Common Name Scientific Name Notes	Site Name Source Dataset Source Record Source Date	Priority Area Occurrence Type More Information (URL) Mgmt Recommendations	Accuracy	Federal Status State Status PHS Listing Status	Sensitive Data Resolution	Source Entity Geometry Type
Townsend's Big-eared Bat Corynorhinus townsendii	 WS_OccurPoint 112189 February 26, 2012	Communal Roost Biotic detection http://wdfw.wa.gov/publications/pub.php?	GPS	N/A Candidate PHS LISTED	Y TOWNSHIP	WA Dept. of Fish and Wildlife Points
Townsend's Big-eared Bat Corynorhinus townsendii	 WS_OccurPoint 145143 May 04, 2016	Communal Roost Biotic detection http://wdfw.wa.gov/publications/pub.php?	GPS	N/A Candidate PHS LISTED	Y TOWNSHIP	WA Dept. of Fish and Wildlife Points
Wetlands	ISSAQUAH CREEK PHSREGION 902512	Aquatic Habitat N/A http://www.ecy.wa.	1/4 mile (Quarter	N/A N/A PHS LISTED	N AS MAPPED	WA Dept. of Fish and Wildlife Polygons
Winter Steelhead Oncorhynchus mykiss	Tibbetts Creek SWIFD 28266	Breeding Area Breeding area http://wdfw.wa.gov/wlm/diversty/soc/soc.htm	NA	N/A N/A PHS LISTED	N AS MAPPED	 Lines
Yuma myotis Myotis yumanensis	 WS_OccurPoint 145124 July 10, 2017	Breeding Area Biotic detection http://wdfw.wa.gov/publications/pub.php?	GPS	N/A N/A PHS LISTED	Y TOWNSHIP	WA Dept. of Fish and Wildlife Points
Yuma myotis Myotis yumanensis	 WS_OccurPoint 148356 June 20, 2018	Breeding Area Biotic detection http://wdfw.wa.gov/publications/pub.php?	GPS	N/A N/A PHS LISTED	Y TOWNSHIP	WA Dept. of Fish and Wildlife Points

WDFW Test Map

May 4, 2020

PHS Report Clip Area
PT
LN
AS MAPPED
SECTION
QTR-TWP
TOWNSHIP

1:19,842

0 0.15 0.3 0.6 mi
0 0.275 0.55 1.1 km

Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

United States Department of Agriculture

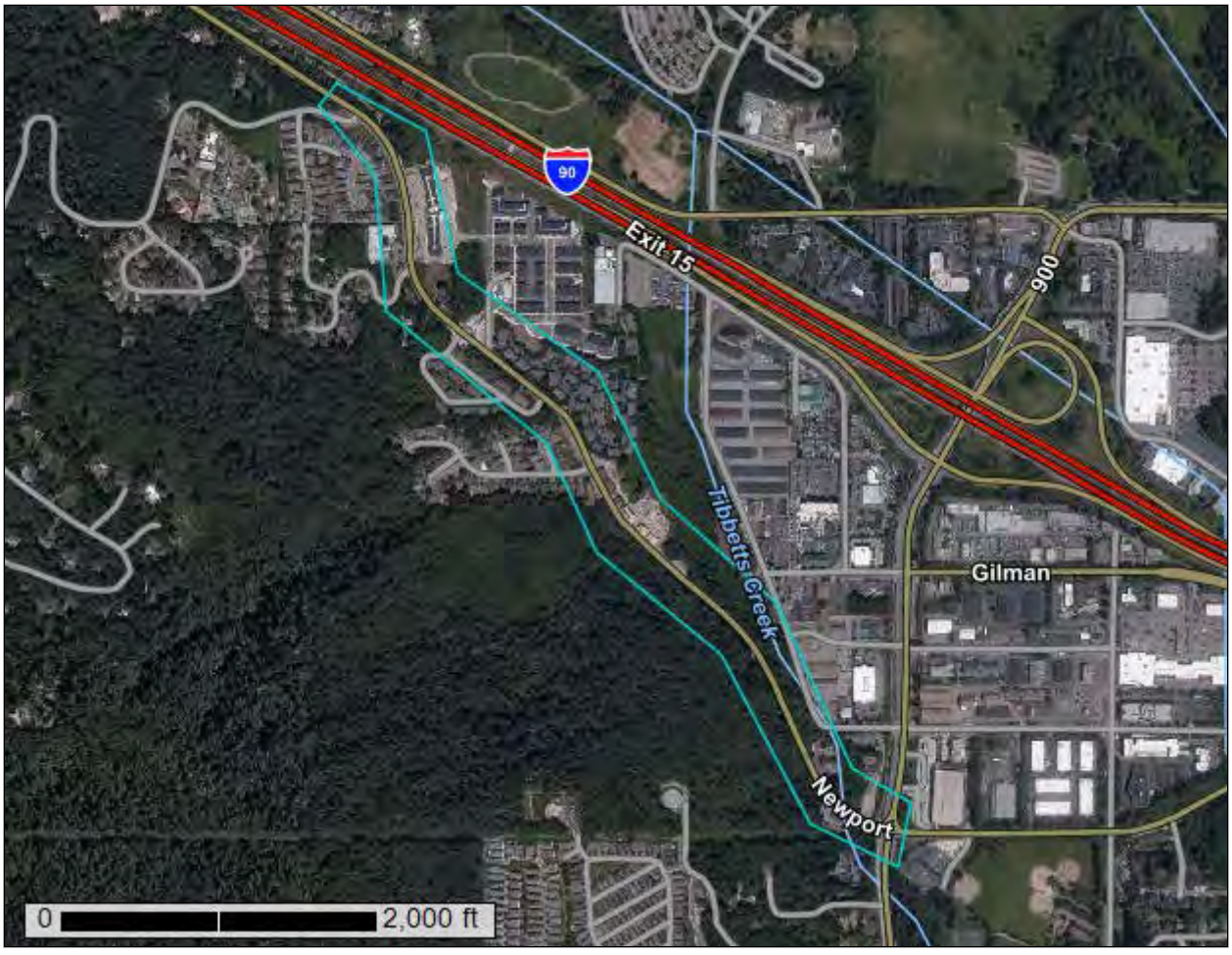
NRCS

Natural Resources Conservation Service

A product of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local participants

Custom Soil Resource Report for King County Area, Washington

Newport Way Improvements Project



May 4, 2020

Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (https://offices.sc.egov.usda.gov/locator/app?agency=nrcs) or your NRCS State Soil Scientist (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

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Contents

How Soil Surveys Are Made

Soil surveys are made to provide information about the soils and miscellaneous areas in a specific area. They include a description of the soils and miscellaneous areas and their location on the landscape and tables that show soil properties and limitations affecting various uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They observed and described many soil profiles. A soil profile is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed or from the surface down to bedrock. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

Currently, soils are mapped according to the boundaries of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one or more MLRA.

The soils and miscellaneous areas in a survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil

scientists classified and named the soils in the survey area, they compared the individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

The objective of soil mapping is not to delineate pure map unit components; the objective is to separate the landscape into landforms or landform segments that have similar use and management requirements. Each map unit is defined by a unique combination of soil components and/or miscellaneous areas in predictable proportions. Some components may be highly contrasting to the other components of the map unit. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The delineation of such landforms and landform segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Soil scientists make many field observations in the process of producing a soil map. The frequency of observation is dependent upon several factors, including scale of mapping, intensity of mapping, design of map units, complexity of the landscape, and experience of the soil scientist. Observations are made to test and refine the soil-landscape model and predictions and to verify the classification of the soils at specific locations. Once the soil-landscape model is refined, a significantly smaller number of measurements of individual soil properties are made and recorded. These measurements may include field measurements, such as those for color, depth to bedrock, and texture, and laboratory measurements, such as those for content of sand, silt, clay, salt, and other components. Properties of each soil typically vary from one point to another across the landscape.

Observations for map unit components are aggregated to develop ranges of characteristics for the components. The aggregated values are presented. Direct measurements do not exist for every property presented for every map unit component. Values for some properties are estimated from combinations of other properties.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and

identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

Custom Soil Resource Report
Soil Map

Map Scale: 1:8,850 if printed on A portrait (8.5" x 11") sheet.

N

Meters: 0 100 200 400 600

Feet: 0 400 800 1600 2400

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 10N WGS84

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: King County Area, Washington
Survey Area Data: Version 15, Sep 16, 2019

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Jul 1, 2019—Jul 25, 2019

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
AkF	Alderwood and Kitsap soils, very steep	16.7	25.9%
Bh	Bellingham silt loam	0.5	0.7%
EvC	Everett very gravelly sandy loam, 8 to 15 percent slopes	19.5	30.3%
EvD	Everett very gravelly sandy loam, 15 to 30 percent slopes	6.1	9.5%
KpB	Kitsap silt loam, 2 to 8 percent slopes	8.3	12.9%
Ma	Mixed alluvial land	6.5	10.1%
Sh	Sammamish silt loam	5.7	8.9%
Sk	Seattle muck	1.1	1.8%
Totals for Area of Interest		**64.5**	**100.0%**

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not

mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

King County Area, Washington

AkF—Alderwood and Kitsap soils, very steep

Map Unit Setting

National map unit symbol: 1hmsn
Elevation: 50 to 800 feet
Mean annual precipitation: 25 to 60 inches
Mean annual air temperature: 48 to 52 degrees F
Frost-free period: 160 to 220 days
Farmland classification: Not prime farmland

Map Unit Composition

Alderwood and similar soils: 50 percent
Kitsap and similar soils: 25 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Alderwood

Setting

Landform: Moraines, till plains
Parent material: Basal till with some volcanic ash

Typical profile

H1 - 0 to 12 inches: gravelly ashy sandy loam
H2 - 12 to 27 inches: very gravelly sandy loam
H3 - 27 to 60 inches: very gravelly sandy loam

Properties and qualities

Slope: 25 to 70 percent
Depth to restrictive feature: 24 to 40 inches to densic material
Natural drainage class: Moderately well drained
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.06 in/hr)
Depth to water table: About 18 to 37 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: Very low (about 2.5 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7e
Hydrologic Soil Group: B
Hydric soil rating: No

Description of Kitsap

Setting

Landform: Terraces
Parent material: Lacustrine deposits with a minor amount of volcanic ash

Typical profile

H1 - 0 to 5 inches: ashy silt loam
H2 - 5 to 24 inches: ashy silt loam
H3 - 24 to 60 inches: stratified silt to silty clay loam

Properties and qualities

Slope: 25 to 70 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Moderately well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: About 18 to 36 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: High (about 11.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7e
Hydrologic Soil Group: C
Hydric soil rating: No

Bh—Bellingham silt loam

Map Unit Setting

National map unit symbol: 1hmsw
Elevation: 0 to 820 feet
Mean annual precipitation: 35 to 60 inches
Mean annual air temperature: 50 degrees F
Frost-free period: 150 to 210 days
Farmland classification: Prime farmland if drained

Map Unit Composition

Bellingham and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Bellingham

Setting

Landform: Depressions, drainageways
Parent material: Alluvium

Typical profile

H1 - 0 to 11 inches: silt loam
H2 - 11 to 60 inches: silty clay loam

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: About 0 to 12 inches
Frequency of flooding: None

Frequency of ponding: None
Available water storage in profile: Very high (about 12.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 5w
Hydrologic Soil Group: C/D
Forage suitability group: Wet Soils (G002XN102WA)
Hydric soil rating: Yes

Minor Components

Alderwood

Percent of map unit: 5 percent
Hydric soil rating: No

Everett

Percent of map unit: 5 percent
Hydric soil rating: No

Seattle

Percent of map unit: 5 percent
Landform: Depressions
Hydric soil rating: Yes

EvC—Everett very gravelly sandy loam, 8 to 15 percent slopes

Map Unit Setting

National map unit symbol: 2t62b
Elevation: 30 to 900 feet
Mean annual precipitation: 35 to 91 inches
Mean annual air temperature: 48 to 52 degrees F
Frost-free period: 180 to 240 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Everett and similar soils: 80 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Everett

Setting

Landform: Kames, eskers, moraines
Landform position (two-dimensional): Shoulder, footslope
Landform position (three-dimensional): Crest, base slope
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Sandy and gravelly glacial outwash

Typical profile

Oi - 0 to 1 inches: slightly decomposed plant material

A - 1 to 3 inches: very gravelly sandy loam
Bw - 3 to 24 inches: very gravelly sandy loam
C1 - 24 to 35 inches: very gravelly loamy sand
C2 - 35 to 60 inches: extremely cobbly coarse sand

Properties and qualities

Slope: 8 to 15 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Somewhat excessively drained
Capacity of the most limiting layer to transmit water (Ksat): High (1.98 to 5.95 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: Low (about 3.2 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4s
Hydrologic Soil Group: A
Forage suitability group: Droughty Soils (G002XN402WA), Droughty Soils (G002XS401WA), Droughty Soils (G002XF403WA)
Hydric soil rating: No

Minor Components

Indianola

Percent of map unit: 10 percent
Landform: Eskers, kames, terraces
Landform position (three-dimensional): Riser
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Alderwood

Percent of map unit: 10 percent
Landform: Ridges, hills
Landform position (two-dimensional): Shoulder
Landform position (three-dimensional): Nose slope, talf
Down-slope shape: Linear, convex
Across-slope shape: Convex
Hydric soil rating: No

EvD—Everett very gravelly sandy loam, 15 to 30 percent slopes

Map Unit Setting

National map unit symbol: 2t62c
Elevation: 30 to 900 feet
Mean annual precipitation: 35 to 91 inches
Mean annual air temperature: 48 to 52 degrees F
Frost-free period: 180 to 240 days

Farmland classification: Farmland of statewide importance

Map Unit Composition

Everett and similar soils: 80 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Everett

Setting

Landform: Kames, eskers, moraines
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Sandy and gravelly glacial outwash

Typical profile

Oi - 0 to 1 inches: slightly decomposed plant material
A - 1 to 3 inches: very gravelly sandy loam
Bw - 3 to 24 inches: very gravelly sandy loam
C1 - 24 to 35 inches: very gravelly loamy sand
C2 - 35 to 60 inches: extremely cobbly coarse sand

Properties and qualities

Slope: 15 to 30 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Somewhat excessively drained
Capacity of the most limiting layer to transmit water (Ksat): High (1.98 to 5.95 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: Low (about 3.2 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: A
Forage suitability group: Droughty Soils (G002XN402WA), Droughty Soils (G002XS401WA)
Hydric soil rating: No

Minor Components

Alderwood

Percent of map unit: 10 percent
Landform: Ridges, hills
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope, nose slope, talf
Down-slope shape: Linear, convex
Across-slope shape: Convex
Hydric soil rating: No

Indianola

Percent of map unit: 10 percent
Landform: Eskers, kames, terraces

Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

KpB—Kitsap silt loam, 2 to 8 percent slopes

Map Unit Setting

National map unit symbol: 1hmt9
Elevation: 0 to 590 feet
Mean annual precipitation: 37 inches
Mean annual air temperature: 50 degrees F
Frost-free period: 160 to 200 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Kitsap and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Kitsap

Setting

Landform: Terraces
Parent material: Lacustrine deposits with a minor amount of volcanic ash

Typical profile

H1 - 0 to 5 inches: silt loam
H2 - 5 to 24 inches: silt loam
H3 - 24 to 60 inches: stratified silt to silty clay loam

Properties and qualities

Slope: 2 to 8 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Moderately well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: About 18 to 36 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: High (about 11.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3w
Hydrologic Soil Group: C
Forage suitability group: Soils with Few Limitations (G002XN502WA)
Hydric soil rating: No

Minor Components

Alderwood
Percent of map unit: 10 percent
Hydric soil rating: No

Bellingham
Percent of map unit: 3 percent
Landform: Depressions
Hydric soil rating: Yes

Seattle
Percent of map unit: 1 percent
Landform: Depressions
Hydric soil rating: Yes

Tukwila
Percent of map unit: 1 percent
Landform: Depressions
Hydric soil rating: Yes

Ma—Mixed alluvial land

Map Unit Setting
National map unit symbol: 1hmtf
Elevation: 0 to 590 feet
Mean annual precipitation: 25 to 90 inches
Mean annual air temperature: 46 to 54 degrees F
Frost-free period: 160 to 200 days
Farmland classification: Farmland of statewide importance

Map Unit Composition
Alluvial land, mixed, and similar soils: 100 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Alluvial Land, Mixed

Typical profile
H1 - 0 to 8 inches: sand
H2 - 8 to 20 inches: fine sand
H3 - 20 to 60 inches: sand
H4 - 60 to 70 inches: loamy fine sand, gravelly sand
H4 - 60 to 70 inches:

Properties and qualities
Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): High to very high (5.95 to 19.98 in/hr)
Depth to water table: About 12 to 36 inches

Frequency of flooding: Frequent
Frequency of ponding: None
Available water storage in profile: Very low (about 3.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4w
Hydrologic Soil Group: A
Hydric soil rating: No

Sh—Sammamish silt loam

Map Unit Setting

National map unit symbol: 1hmv3
Elevation: 0 to 50 feet
Mean annual precipitation: 45 to 60 inches
Mean annual air temperature: 48 to 52 degrees F
Frost-free period: 180 to 220 days
Farmland classification: Prime farmland if drained

Map Unit Composition

Sammamish and similar soils: 84 percent
Minor components: 16 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Sammamish

Setting

Landform: Flood plains
Parent material: Alluvium

Typical profile

H1 - 0 to 12 inches: silt loam
H2 - 12 to 60 inches: stratified loamy sand to silt loam

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Somewhat poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 1.98 in/hr)
Depth to water table: About 12 to 24 inches
Frequency of flooding: Occasional
Frequency of ponding: None
Available water storage in profile: High (about 11.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4w
Hydrologic Soil Group: B/D
Forage suitability group: Seasonally Wet Soils (G002XN202WA)
Hydric soil rating: Yes

Minor Components

Bellingham
Percent of map unit: 10 percent
Landform: Depressions
Hydric soil rating: Yes

Puget
Percent of map unit: 5 percent
Landform: Depressions
Hydric soil rating: Yes

Puyallup
Percent of map unit: 1 percent
Hydric soil rating: No

Sk—Seattle muck

Map Unit Setting
National map unit symbol: 1hmv4
Elevation: 0 to 1,000 feet
Mean annual precipitation: 25 to 50 inches
Mean annual air temperature: 48 to 52 degrees F
Frost-free period: 150 to 250 days
Farmland classification: Prime farmland if drained

Map Unit Composition
Seattle and similar soils: 75 percent
Minor components: 25 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Seattle

Setting
Landform: Depressions
Parent material: Grassy organic material

Typical profile
H1 - 0 to 11 inches: muck
H2 - 11 to 60 inches: stratified mucky peat to muck

Properties and qualities
Slope: 0 to 1 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Very poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 1.98 in/hr)
Depth to water table: About 0 inches
Frequency of flooding: None
Frequency of ponding: Frequent
Available water storage in profile: Very high (about 23.5 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 5w
Hydrologic Soil Group: B/D
Forage suitability group: Wet Soils (G002XN102WA)
Hydric soil rating: Yes

Minor Components

Shalcar

Percent of map unit: 10 percent
Landform: Depressions
Hydric soil rating: Yes

Tukwila

Percent of map unit: 10 percent
Landform: Depressions
Hydric soil rating: Yes

Bellingham

Percent of map unit: 3 percent
Landform: Depressions
Hydric soil rating: Yes

Norma

Percent of map unit: 2 percent
Landform: Depressions
Hydric soil rating: Yes

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APPENDIX B
Site Photographs

Photograph 1. Tibbetts Creek viewed from the southern side of Newport Way near intersection of Newport Way and State Route 900 (Photo taken October 30, 2017)

Photograph 2. Tibbetts Creek near intersection with Newport Way and State Route 900, viewed downstream from the north side of Newport Way (Photo taken October 30, 2017).

Site Photographs	
Newport Way Improvements Project Issaquah, Washington	
GeoEngineers	Figure B-1

Photograph 3. Box culvert under Newport Way for Tibbetts Creek (Photo taken October 30, 2017).

Photograph 4. Stream 0169G viewed to the northeast (downstream) from Newport Way from the culvert outlet (Photo taken October 30, 2017).

Site Photographs	
Newport Way Improvements Project Issaquah, Washington	
GeoEngineers	**Figure B-2**

Photograph 5. Stream 0169G viewed further downstream of Newport Way, illustrating modified channel, bank and adjacent residential property on the left (Photo taken October 30, 2016).

Photograph 6. Stream 0169G outlet on the left, viewed looking back towards Newport Way (Photo taken July 28, 2016).

Site Photographs	
Newport Way Improvements Project Issaquah, Washington	
GeoEngineers	**Figure B-3**

Photograph 7. Wetland A interior, including Tibbetts Creek (Photo taken May 3, 2018).

Photograph 8. Wetland A buffer conditions as viewed from Newport Way. Wetland A and Tibbetts creek are in background (Photo taken October 30, 2017).

Site Photographs	
Newport Way Improvements Project Issaquah, Washington	
GeoEngineers	**Figure B-4**

Photograph 9. Stream 0169I viewed at culvert outlet on downstream (northeast) side of Newport Way (Photo taken April 27, 2018).

Photograph 10. Stream 0169I viewed looking upstream from Newport Way (Photo taken July 2, 2019).

Site Photographs	
Newport Way Improvements Project Issaquah, Washington	
GeoEngineers	**Figure B-5**

Photograph 11. Typical vegetation conditions adjacent to Newport Way, viewed to the southeast from near Stream 0169I (Photo taken October 30, 2017).

Photograph 12. Stream 0169H upstream channel conditions (Photo taken October 30, 2017).

Site Photographs	
Newport Way Improvements Project Issaquah, Washington	
GeoEngineers	**Figure B-6**

Photograph 13. Stream 0169H at culvert outlet on north side of Newport Way (Photo taken October 30, 2017).

Photograph 14. Stream 0169H viewed to the north from Newport Way, depicting degraded buffer conditions in the foreground (Photo taken October 30, 2017).

Site Photographs	
Newport Way Improvements Project Issaquah, Washington	
GeoEngineers	**Figure B-7**

Photograph 15. Recently reconstructed channel of Anti-Aircraft Creek (Photo taken October 10, 2017).

Photograph 16. Prior channel of Anti-Aircraft Creek downstream of Newport Way. This channel has been replaced with a new alignment and newly constructed channel and has been converted to a storm drainage easement (Photo taken October 30, 2017).

Site Photographs	
Newport Way Improvements Project Issaquah, Washington	
GeoEngineers	**Figure B-8**

Photograph 17. Typical roadside conditions along Newport Way near Sammamish Point and Gateway development projects (Photo taken October 30, 2017).

Photograph 18. Typical roadside conditions along Newport Way near Sammamish Point and Gateway development projects (Photo taken October 30, 2017).

Site Photographs	
Newport Way Improvements Project Issaquah, Washington	
GeoEngineers	Figure B-9

Photograph 19. Schneider Creek corridor upstream (south) of Newport Way (Photo taken October 10, 2017).

Photograph 20. Schneider Creek culvert inlet and riparian vegetation viewed from Newport Way (Photo taken October 10, 2017).

Site Photographs	
Newport Way Improvements Project Issaquah, Washington	
GeoEngineers	**Figure B-10**

Photograph 21. Schneider Creek Newport Way crossing culvert outlet viewed upstream toward Newport Way from the northeast. The buffer consists of mowed grass on this residential property. (Photo taken October 10, 2017)

Photograph 22. Schneider Creek viewed northeast (downstream) from offsite portion of stream corridor (Photo taken October 10, 2017).

Site Photographs	
Newport Way Improvements Project Issaquah, Washington	
GeoEngineers	**Figure B-11**

APPENDIX C
Sample Plot Data Form

WETLAND DETERMINATION DATA FORM - Western Mountains, Valleys, and Coast Region

Project/Site: Newport Way Improvements Project City/County: King Sampling Date: 5/3/2018

Applicant/Owner: City of Issaquah State: WA Sampling Point: SP1

Investigator(s): DBC Section/Township/Range: S29 T24N R06E

Landform (hillslope, terrace, etc.): terrace Local Relief (concave, convex, none): concave Slope (%): <5%

Subregion (LLR): A Lat: 47.545523° Long: -122.067415° Datum: WGS 1984

Soil Map Unit Name: Alderwood and Kitsap soils, very steep NWI Classification: NA

Are climatic/hydrologic conditions on the site typical for this time of year? ☑ Yes ☐ No (if no, explain in Remarks.)

Are ☐ Vegetation ☐ Soil ☐ Hydrology significantly disturbed? Are "normal circumstances" present? ☑ Yes ☐ No

Are ☐ Vegetation ☐ Soil ☐ Hydrology naturally problematic? (if needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS

Hydrophytic Vegetation Present?	☑ Yes	☐ No	Is the sampled area within a Wetland? ☑ Yes ☐ No
Hydric Soil Present?	☑ Yes	☐ No	
Weltand Hydrology Present?	☑ Yes	☐ No	

Remarks:

VEGETATION - Use scientific names of plants.

Tree Stratum	Absolute % Cover	Dominant Species?	Indicator Status
1. Alnus rubra	20	Y	FAC
2.			
3.			
4.			
	20	= Total Cover	
Sapling/Shurb Stratum			
1. Rubus spectabilis	15	Y	FAC
2. Salix sp.	25	Y	FACW
3.			
4.			
5.			
	40	= Total Cover	
Herb Stratum			
1. Athyrium felix-femina	5	N	FAC
2. Equisetum arvense	10	N	FAC
3. Phalaris arundinacea	70	Y	FACW
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	85	= Total Cover	
Woody Vine Stratum			
1.			
2.			
	0	= Total Cover	

% Bare Ground in Herb Stratum

Remarks:

Dominance Test Worksheet:

Number of dominant Species That are OBL, FACW, or FAC: **4** (A)

Total Number of Dominant Species Across All Strata: **4** (B)

Percent of dominant Species That are OBL, FACW, or FAC: **100** (A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:	
OBL Species	0	x 1 =	0
FACW Species	95	x 2 =	190
FAC Species	50	x 3 =	150
FACU Species	0	x 4 =	0
UPL Species	0	x 5 =	0
Column Totals:	145 (A)		340 (B)

Prevalence Index = B/A = 2.34

Hydrophytic Vegetation Indicators:

- ☐ 1 - Rapid Test for Hydrophytic Vegetation
- ☑ 2 - Dominance Test is >50%
- ☑ 3 - Prevalence Index is ≤3.0[1]
- ☐ 4 - Morphological Adaptations[1] (provide supporting data in Remarks or on a separate sheet.
- ☐ 5 - Wetland Non-Vascular Plants[1]
- ☐ Problem Hydrophytic Vegetation (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? ☑ Yes ☐ No

SOIL

Sampling Point: SP1

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0 to 6	**10 YR 3/2**							
6 to 20	**10 YR 3/1**	**85**	**5 YR 4/6**	**15**	**C**	**PL**	**loam**	

[1]Type: C=Concentration, D=Depletion, RM-Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histisol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1) **(except MLRA 1)**
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☑ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ☐ 2 cm Muck (A10)
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dard Surface (TF12)
- ☐ Other (Explain in Remarks)

"Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present?

☑ Yes ☐ No

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Water-Stained Leaves (B9) **(except MLRA 1, 2, 4A, and 4B)**
- ☐ Salt Crust (B11)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduction Iron (C4)
- ☐ Recent Iron Reduction Tilled Soils (C6)
- ☐ Stunted or Stressed Plants (D1) **(LRR A)**
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water-Stained Leaves (B9) **(MLRA 1, 2, 4A, and 4B)**
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Saturated Visible on Aerial Imagery (C9)
- ☑ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☑ FAC-Neutral Test (D5)
- ☐ Raised Ant Mounds (D6) **(LRR A)**
- ☐ Frost-Heave Hummocks (D7)

Field Observations:

Wetland Hydrology Present?

Surface Water Present?	☐ Yes	☑ No	Depth (inches):	
Water Table Present?	☐ Yes	☑ No	Depth (inches):	
Saturation Present? (includes capillary fringe)	☑ Yes	☐ No	Depth (inches):	18"

☑ Yes ☐ No

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: two secondary indicators

WETLAND DETERMINATION DATA FORM - Western Mountains, Valleys, and Coast Region

Project/Site: Newport Way Improvements Project City/County: King Sampling Date: 5/3/2018

Applicant/Owner: City of Issaquah State: WA Sampling Point: SP2

Investigator(s): DBC Section/Township/Range: S29 T24N R06E

Landform (hillslope, terrace, etc.): terrace Local Relief (concave, convex, none): concave Slope (%): <5%

Subregion (LLR): A Lat: 47.545410° Long: -122.067498° Datum: WGS 1984

Soil Map Unit Name: Alderwood and Kitsap soils, very steep NWI Classification: NA

Are climatic/hydrologic conditions on the site typical for this time of year? ☑ Yes ☐ No (if no, explain in Remarks.)

Are ☐ Vegetation ☐ Soil ☐ Hydrology significantly disturbed? Are "normal circumstances" present? ☐ Yes ☐ No

Are ☐ Vegetation ☐ Soil ☐ Hydrology naturally problematic? (if needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS

Hydrophytic Vegetation Present?	☑ Yes	☐ No	Is the sampled area within a Wetland? ☐ Yes ☑ No
Hydric Soil Present?	☐ Yes	☑ No	
Weltand Hydrology Present?	☐ Yes	☑ No	

Remarks: FAC veg community meets hydrophytic vegetation standard; no other parameters met.

VEGETATION - Use scientific names of plants.

Tree Stratum	Absolute % Cover	Dominant Species?	Indicator Status
1. Alnus rubra	60	Y	FAC
2.			
3.			
4.			
	60	= Total Cover	
Sapling/Shurb Stratum			
1. Rubus spectabilis	30	Y	FAC
2. Symphoricarpos albus	30	Y	FACU
3.			
4.			
5.			
	60	= Total Cover	
Herb Stratum			
1. Polystichum munitum	20	Y	FAC
2. Athyrium felix-femina	30	Y	FAC
3. Equisetum arvense	10	N	FAC
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	60	= Total Cover	
Woody Vine Stratum			
1.			
2.			
	0	= Total Cover	

% Bare Ground in Herb Stratum

Remarks: primarly FAC community

Dominance Test Worksheet:

Number of dominant Species That are OBL, FACW, or FAC: **4** (A)

Total Number of Dominant Species Across All Strata: **5** (B)

Percent of dominant Species That are OBL, FACW, or FAC: **80** (A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:	
OBL Species	0	x 1 =	0
FACW Species	0	x 2 =	0
FAC Species	150	x 3 =	450
FACU Species	30	x 4 =	120
UPL Species	0	x 5 =	0
Column Totals:	180 (A)		570 (B)

Prevalence Index = B/A = 3.17

Hydrophytic Vegetation Indicators:

- ☐ 1 - Rapid Test for Hydrophytic Vegetation
- ☑ 2 - Dominance Test is >50%
- ☐ 3 - Prevalence Index is ≤3.0[1]
- ☐ 4 - Morphological Adaptations[1] (provide supporting data in Remarks or on a separate sheet.
- ☐ 5 - Wetland Non-Vascular Plants[1]
- ☐ Problem Hydrophytic Vegetation (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? ☑ Yes ☐ No

SOIL

Sampling Point: SP2

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-12"	**10YR 2/2**	**100**	**--**	**--**	**--**	**--**	**loam**	

[1]Type: C=Concentration, D=Depletion, RM-Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histisol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1) **(except MLRA 1)**
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ☐ 2 cm Muck (A10)
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dard Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present?

☐ Yes ☑ No

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Water-Stained Leaves (B9) **(except MLRA 1, 2, 4A, and 4B)**
- ☐ Salt Crust (B11)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduction Iron (C4)
- ☐ Recent Iron Reduction Tilled Soils (C6)
- ☐ Stunted or Stressed Plants (D1) **(LRR A)**
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water-Stained Leaves (B9) **(MLRA 1, 2, 4A, and 4B)**
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Saturated Visible on Aerial Imagery (C9)
- ☐ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)
- ☐ Raised Ant Mounds (D6) **(LRR A)**
- ☐ Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present? ☐ Yes ☑ No Depth (inches): _____

Water Table Present? ☐ Yes ☑ No Depth (inches): _____

Saturation Present? (includes capillary fringe) ☐ Yes ☑ No Depth (inches): _____

Wetland Hydrology Present?

☐ Yes ☑ No

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM - Western Mountains, Valleys, and Coast Region

Project/Site: Newport Way Improvements Project City/County: King Sampling Date: 5/3/2018

Applicant/Owner: City of Issaquah State: WA Sampling Point: SP3

Investigator(s): DBC Section/Township/Range: S29 T24N R06E

Landform (hillslope, terrace, etc.): terrace Local Relief (concave, convex, none): concave Slope (%): <5%

Subregion (LLR): A Lat: 47.544552° Long: -122.066469 Datum: WGS 1984

Soil Map Unit Name: Alderwood and Kitsap soils, very steep NWI Classification: NA

Are climatic/hydrologic conditions on the site typical for this time of year? ☑ Yes ☐ No (if no, explain in Remarks.)

Are ☐ Vegetation ☐ Soil ☐ Hydrology significantly disturbed? Are "normal circumstances" present? ☐ Yes ☐ No

Are ☐ Vegetation ☐ Soil ☐ Hydrology naturally problematic? (if needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS

Hydrophytic Vegetation Present?	☑ Yes	☐ No	Is the sampled area within a Wetland? ☑ Yes ☐ No
Hydric Soil Present?	☑ Yes	☐ No	
Weltand Hydrology Present?	☑ Yes	☐ No	

Remarks:

VEGETATION - Use scientific names of plants.

Tree Stratum	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	0	= Total Cover	
Sapling/Shurb Stratum			
1. *Rubus spectabilis*	15	Y	FAC
2. *Symphoricarpos albus*	5	Y	FACU
3.			
4.			
5.			
	20	= Total Cover	
Herb Stratum			
1. *Equisetum arvense*	10	N	FAC
2. *Athyrium felix-femina*	25	Y	FAC
3. *Phalaris arundinacea*	50	Y	FACW
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	85	= Total Cover	
Woody Vine Stratum			
1.			
2.			
	0	= Total Cover	

% Bare Ground in Herb Stratum

Dominance Test Worksheet:

Number of dominant Species That are OBL, FACW, or FAC: **3** (A)

Total Number of Dominant Species Across All Strata: **4** (B)

Percent of dominant Species That are OBL, FACW, or FAC: **75** (A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:	
OBL Species		x 1 =	0
FACW Species	50	x 2 =	100
FAC Species	50	x 3 =	150
FACU Species	5	x 4 =	20
UPL Species		x 5 =	0
Column Totals	105 (A)		270 (B)

Prevalence Index = B/A = 2.57

Hydrophytic Vegetation Indicators:

- ☐ 1 - Rapid Test for Hydrophytic Vegetation
- ☑ 2 - Dominance Test is >50%
- ☑ 3 - Prevalence Index is ≤3.0[1]
- ☐ 4 - Morphological Adaptations[1] (provide supporting data in Remarks or on a separate sheet.
- ☐ 5 - Wetland Non-Vascular Plants[1]
- ☐ Problem Hydrophytic Vegetation (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? ☑ Yes ☐ No

Remarks:

SOIL Sampling Point: SP3

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0 to 12	**10 YR 2/1**	**100**	--	--	--	--	**loamy mucky mineral**	
12 to 18	**2.5 Y 3/1**	**100**	--	--	--	--	**sandy gravelly**	**loam**

[1]Type: C=Concentration, D=Depletion, RM-Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histisol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☑ Loamy Mucky Mineral (F1) **(except MLRA 1)**
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ☐ 2 cm Muck (A10)
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dard Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? ☑ Yes ☐ No

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☐ Surface Water (A1)
- ☑ High Water Table (A2)
- ☑ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Water-Stained Leaves (B9) **(except MLRA 1, 2, 4A, and 4B)**
- ☐ Salt Crust (B11)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduction Iron (C4)
- ☐ Recent Iron Reduction Tilled Soils (C6)
- ☐ Stunted or Stressed Plants (D1) **(LRR A)**
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water-Stained Leaves (B9) **(MLRA 1, 2, 4A, and 4B)**
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Saturated Visible on Aerial Imagery (C9)
- ☐ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)
- ☐ Raised Ant Mounds (D6) **(LRR A)**
- ☐ Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present?	☐ Yes	☑ No	Depth (inches):	
Water Table Present?	☑ Yes	☐ No	Depth (inches):	2" bgs
Saturation Present? (includes capillary fringe)	☑ Yes	☐ No	Depth (inches):	0" bgs

Wetland Hydrology Present? ☑ Yes ☐ No

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM - Western Mountains, Valleys, and Coast Region

Project/Site: Newport Way Improvements Project City/County: King Sampling Date: 5/3/2018

Applicant/Owner: City of Issaquah State: WA Sampling Point: SP4

Investigator(s): DBC Section/Township/Range: S29 T24N R06E

Landform (hillslope, terrace, etc.): slope Local Relief (concave, convex, none): concave Slope (%): 5%

Subregion (LLR): A Lat: 47.544284° Long: -122.066400° Datum: WGS 1984

Soil Map Unit Name: Alderwood and Kitsap soils, very steep NWI Classification: NA

Are climatic/hydrologic conditions on the site typical for this time of year? ☑ Yes ☐ No (if no, explain in Remarks.)

Are ☐ Vegetation ☐ Soil ☐ Hydrology significantly disturbed? Are "normal circumstances" present? ☑ Yes ☐ No

Are ☐ Vegetation ☐ Soil ☐ Hydrology naturally problematic? (if needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS

Hydrophytic Vegetation Present?	☐ Yes	☑ No	Is the sampled area within a Wetland? ☐ Yes ☑ No
Hydric Soil Present?	☐ Yes	☑ No	
Weltand Hydrology Present?	☐ Yes	☑ No	

Remarks:

VEGETATION - Use scientific names of plants.

Tree Stratum	Absolute % Cover	Dominant Species?	Indicator Status
1. Alnus rubra	25	Y	FAC
2. Acer macrophyllum	25	Y	FACU
3.			
4.			
	50	= Total Cover	
Sapling/Shurb Stratum			
1. Tsuga heterophylla	10	N	FACU
2. Abies grandis	10	N	FACU
3. Rubus spectabilis	20	Y	FAC
4. Oemleria cerasiformis	15	Y	FACU
5.			
	55	= Total Cover	
Herb Stratum			
1. Ranunculus repens	10	Y	FAC
2. Geranium robertianum	20	Y	FACU
3. Polystichum munitum	5	N	FAC
4. Rubus parviflorus	15	Y	FACU
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	50	= Total Cover	
Woody Vine Stratum			
1.			
2.			
	0	= Total Cover	

% Bare Ground in Herb Stratum

Remarks:

Dominance Test Worksheet:

Number of dominant Species That are OBL, FACW, or FAC: **3** (A)

Total Number of Dominant Species Across All Strata: **7** (B)

Percent of dominant Species That are OBL, FACW, or FAC: **43** (A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:	
OBL Species	0	x 1 =	0
FACW Species	0	x 2 =	0
FAC Species	60	x 3 =	180
FACU Species	95	x 4 =	380
UPL Species	0	x 5 =	0
Column Totals:	155 (A)		560 (B)

Prevalence Index = B/A = 3.61

Hydrophytic Vegetation Indicators:

☐ 1 - Rapid Test for Hydrophytic Vegetation

☐ 2 - Dominance Test is >50%

☐ 3 - Prevalence Index is ≤3.0[1]

☐ 4 - Morphological Adaptations[1] (provide supporting data in Remarks or on a separate sheet.

☐ 5 - Wetland Non-Vascular Plants[1]

☐ Problem Hydrophytic Vegetation (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? ☐ Yes ☑ No

SOIL

Sampling Point: SP4

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0 to 8	**7.5 YR 2.5/2**	**100**	**--**	**--**	**--**	**--**	**loam**	
8 to 11	**2.5 Y 4/3**	**100**	**--**	**--**	**--**	**--**		
								shovel refusal at 11"

[1]Type: C=Concentration, D=Depletion, RM-Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histisol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1) **(except MLRA 1)**
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ☐ 2 cm Muck (A10)
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dard Surface (TF12)
- ☐ Other (Explain in Remarks)

[illegible] indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present?

☐ Yes ☑ No

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Water-Stained Leaves (B9) **(except MLRA 1, 2, 4A, and 4B)**
- ☐ Salt Crust (B11)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduction Iron (C4)
- ☐ Recent Iron Reduction Tilled Soils (C6)
- ☐ Stunted or Stressed Plants (D1) **(LRR A)**
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water-Stained Leaves (B9) **(MLRA 1, 2, 4A, and 4B)**
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Saturated Visible on Aerial Imagery (C9)
- ☐ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)
- ☐ Raised Ant Mounds (D6) **(LRR A)**
- ☐ Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present? ☐ Yes ☑ No Depth (inches): _____

Water Table Present? ☐ Yes ☑ No Depth (inches): _____

Saturation Present? (includes capillary fringe) ☐ Yes ☑ No Depth (inches): _____

Wetland Hydrology Present?

☐ Yes ☑ No

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM - Western Mountains, Valleys, and Coast Region

Project/Site: Newport Way Improvements Project City/County: King Sampling Date: 5/3/2018

Applicant/Owner: City of Issaquah State: WA Sampling Point: SP5

Investigator(s): DBC Section/Township/Range: S29 T24N R06E

Landform (hillslope, terrace, etc.): slope Local Relief (concave, convex, none): concave Slope (%): 10%

Subregion (LLR): A Lat: 47.543736° Long: -122.065692° Datum: WGS 1984

Soil Map Unit Name: Alderwood and Kitsap soils, very steep NWI Classification: NA

Are climatic/hydrologic conditions on the site typical for this time of year? ☑ Yes ☐ No (if no, explain in Remarks.)

Are ☐ Vegetation ☐ Soil ☐ Hydrology significantly disturbed? Are "normal circumstances" present? ☑ Yes ☐ No

Are ☐ Vegetation ☐ Soil ☐ Hydrology naturally problematic? (if needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS

Hydrophytic Vegetation Present?	☑ Yes	☐ No	Is the sampled area within a Wetland? ☐ Yes ☑ No
Hydric Soil Present?	☐ Yes	☑ No	
Weltand Hydrology Present?	☐ Yes	☑ No	

Remarks: FAC vegetation community qualifies as hydrophytic; no other parameters met.

VEGETATION - Use scientific names of plants.

Tree Stratum	Absolute % Cover	Dominant Species?	Indicator Status
1. Thuja plicata	70	Y	FAC
2. Acer macrophyllum	30	Y	FACU
3.			
4.			
	100	= Total Cover	
Sapling/Shurb Stratum			
1. Acer circinatum	30	Y	FAC
2.			
3.			
4.			
5.			
	30	= Total Cover	
Herb Stratum			
1. Polystichum munitum	30	Y	FAC
2. Equisetum arvense	5	N	FAC
3. Equisetum hyemale	5	N	FACW
4. Rubus ursinus	5	N	FACU
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	45	= Total Cover	
Woody Vine Stratum			
1.			
2.			
	0	= Total Cover	

% Bare Ground in Herb Stratum

Dominance Test Worksheet:

Number of dominant Species That are OBL, FACW, or FAC: **3** (A)

Total Number of Dominant Species Across All Strata: **4** (B)

Percent of dominant Species That are OBL, FACW, or FAC: **75** (A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:	
OBL Species		x 1 =	0
FACW Species	5	x 2 =	10
FAC Species	135	x 3 =	405
FACU Species	35	x 4 =	140
UPL Species		x 5 =	0
Column Totals:	175 (A)		555 (B)

Prevalence Index = B/A = 3.17

Hydrophytic Vegetation Indicators:

- ☐ 1 - Rapid Test for Hydrophytic Vegetation
- ☑ 2 - Dominance Test is >50%
- ☐ 3 - Prevalence Index is ≤3.0[1]
- ☐ 4 - Morphological Adaptations[1] (provide supporting data in Remarks or on a separate sheet.
- ☐ 5 - Wetland Non-Vascular Plants[1]
- ☐ Problem Hydrophytic Vegetation (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Remarks: FAC vegetation community qualifies as hydrophytic

Hydrophytic Vegetation Present? ☑ Yes ☐ No

SOIL

Sampling Point: SP5

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0 to 10"	**10 YR 3/2**	**100**	**--**	**--**	**--**	**--**	**loam**	

[1]Type: C=Concentration, D=Depletion, RM-Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histisol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1) **(except MLRA 1)**
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ☐ 2 cm Muck (A10)
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dard Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present?

☐ Yes ☑ No

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Water-Stained Leaves (B9) **(except MLRA 1, 2, 4A, and 4B)**
- ☐ Salt Crust (B11)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduction Iron (C4)
- ☐ Recent Iron Reduction Tilled Soils (C6)
- ☐ Stunted or Stressed Plants (D1) **(LRR A)**
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water-Stained Leaves (B9) **(MLRA 1, 2, 4A, and 4B)**
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Saturated Visible on Aerial Imagery (C9)
- ☐ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)
- ☐ Raised Ant Mounds (D6) **(LRR A)**
- ☐ Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present? ☐ Yes ☑ No Depth (inches): _____

Water Table Present? ☐ Yes ☑ No Depth (inches): _____

Saturation Present? (includes capillary fringe) ☐ Yes ☑ No Depth (inches): _____

Wetland Hydrology Present?

☐ Yes ☑ No

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

No hydro indicators

WETLAND DETERMINATION DATA FORM - Western Mountains, Valleys, and Coast Region

Project/Site: Newport Way Improvements Project City/County: King Sampling Date: 5/3/2018

Applicant/Owner: City of Issaquah State: WA Sampling Point: SP6

Investigator(s): DBC Section/Township/Range: S29 T24N R06E

Landform (hillslope, terrace, etc.): slope Local Relief (concave, convex, none): concave Slope (%): 5%

Subregion (LLR): A Lat: 47.543418° Long: -122.065843° Datum: WGS 1984

Soil Map Unit Name: Alderwood and Kitsap soils, very steep NWI Classification: NA

Are climatic/hydrologic conditions on the site typical for this time of year? ☑ Yes ☐ No (if no, explain in Remarks.)

Are ☐ Vegetation ☐ Soil ☐ Hydrology significantly disturbed? Are "normal circumstances" present? ☑ Yes ☐ No

Are ☐ Vegetation ☐ Soil ☐ Hydrology naturally problematic? (if needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS

Hydrophytic Vegetation Present?	☑ Yes	☐ No	Is the sampled area within a Wetland? ☑ Yes ☐ No
Hydric Soil Present?	☐ Yes	☑ No	
Weltand Hydrology Present?	☑ Yes	☐ No	

Remarks:

VEGETATION - Use scientific names of plants.

Tree Stratum	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	0	= Total Cover	
Sapling/Shurb Stratum			
1. *Rubus spectabilis*	40	Y	FAC
2. *Thuja plicata*	5	N	FAC
3.			
4.			
5.			
	45	= Total Cover	
Herb Stratum			
1. *Equisetum arvense*	25	Y	FAC
2. *Phalaris arundinacea*	30	Y	FACW
3. *Athyrium felix-femina*	15	N	FAC
4. *Lysichiton americanus*	15	N	OBL
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	85	= Total Cover	
Woody Vine Stratum			
1.			
2.			
	0	= Total Cover	

% Bare Ground in Herb Stratum

Dominance Test Worksheet:

Number of dominant Species That are OBL, FACW, or FAC: **3** (A)

Total Number of Dominant Species Across All Strata: **3** (B)

Percent of dominant Species That are OBL, FACW, or FAC: **100** (A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:	
OBL Species	15	x 1 =	15
FACW Species	30	x 2 =	60
FAC Species	85	x 3 =	255
FACU Species	0	x 4 =	0
UPL Species	0	x 5 =	0
Column Totals:	130 (A)		330 (B)

Prevalence Index = B/A = 2.54

Hydrophytic Vegetation Indicators:

- ☐ 1 - Rapid Test for Hydrophytic Vegetation
- ☑ 2 - Dominance Test is >50%
- ☑ 3 - Prevalence Index is ≤3.0[1]
- ☐ 4 - Morphological Adaptations[1] (provide supporting data in Remarks or on a separate sheet.
- ☐ 5 - Wetland Non-Vascular Plants[1]
- ☐ Problem Hydrophytic Vegetation (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Remarks:

Hydrophytic Vegetation Present? ☑ Yes ☐ No

SOIL

Sampling Point: SP6

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0 to 10"	**10 YR 3/2**	**100**	**--**	**--**	**--**	**--**	**loam**	
10 to 16"	**10 YR 3/2**	**90**	**10 YR 4/6**	**10**	**--**	**--**	**loam**	

[1]Type: C=Concentration, D=Depletion, RM-Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histisol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1) **(except MLRA 1)**
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ☐ 2 cm Muck (A10)
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dard Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present?

☐ Yes ☑ No

Remarks: redox layer too deep to qualify as indicator F6; plot located at wetland margin - assumed shallower groundwater saturation at interior.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☐ Surface Water (A1)
- ☑ High Water Table (A2)
- ☑ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Water-Stained Leaves (B9) **(except MLRA 1, 2, 4A, and 4B)**
- ☐ Salt Crust (B11)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduction Iron (C4)
- ☐ Recent Iron Reduction Tilled Soils (C6)
- ☐ Stunted or Stressed Plants (D1) **(LRR A)**
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water-Stained Leaves (B9) **(MLRA 1, 2, 4A, and 4B)**
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Saturated Visible on Aerial Imagery (C9)
- ☐ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)
- ☐ Raised Ant Mounds (D6) **(LRR A)**
- ☐ Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present?	☐ Yes	☑ No	Depth (inches):	
Water Table Present?	☑ Yes	☐ No	Depth (inches):	4" bgs
Saturation Present? (includes capillary fringe)	☑ Yes	☐ No	Depth (inches):	0" bgs

Wetland Hydrology Present?

☑ Yes ☐ No

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

APPENDIX D
Wetland Rating Form

Wetland name or number ___A_

RATING SUMMARY – Western Washington

Name of wetland (or ID #): Wetland A Date of site visit: 10/30/17 Rated by E. Duncanson Trained by Ecology? X Yes ___No Date of training: June 2017

HGM Class used for rating: Riverine Wetland has multiple HGM classes?_ Y _x_ N

NOTE: **Form is not complete without the figures requested** *(figures can be combined)*.
Source of base aerial photo/map - ESRI ArcGIS

OVERALL WETLAND CATEGORY __II__ (based on functions___ or special characteristics___)

1. Category of wetland based on FUNCTIONS

_____**Category I** – Total score = 23 - 27
___x___**Category II** – Total score = 20 - 22
_____**Category III** – Total score = 16 - 19
_____**Category IV** – Total score = 9 - 15

FUNCTION	Improving Water Quality	Hydrologic	Habitat	
	Circle the appropriate ratings			
Site Potential	H (M) L	(H) M L	H M (L)	
Landscape Potential	H (M) L	(H) M L	H (M) L	
Value	(H) M L	(H) M L	(H) M L	**TOTAL**
Score Based on Ratings	7	9	6	22

Score for each function based on three ratings *(order of ratings is not important)*

9 = H,H,H
8 = H,H,M
7 = H,H,L
7 = H,M,M
6 = H,M,L
6 = M,M,M
5 = H,L,L
5 = M,M,L
4 = M,L,L
3 = L,L,L

2. Category based on SPECIAL CHARACTERISTICS of wetland

CHARACTERISTIC	CATEGORY
Estuarine	**I II**
Wetland of High Conservation Value	**I**
Bog	**I**
Mature Forest	**I**
Old Growth Forest	**I**
Coastal Lagoon	**I II**
Interdunal	**I II III IV**
None of the above	NA

Wetland name or number A

Maps and figures required to answer questions correctly for Western Washington

Depressional Wetlands

Map of:	To answer questions:	Figure #
Cowardin plant classes	D 1.3, H 1.1, H 1.4	
Hydroperiods	D 1.4, H 1.2	
Location of outlet (*can be added to map of hydroperiods)*	D 1.1, D 4.1	
Boundary of area within 150 ft of the wetland *(can be added to another figure)*	D 2.2, D 5.2	
Map of the contributing basin	D 4.3, D 5.3	
1 km Polygon: Area that extends 1 km from entire wetland edge - including polygons for accessible habitat and undisturbed habitat	H 2.1, H 2.2, H 2.3	
Screen capture of map of 303(d) listed waters in basin (from Ecology website)	D 3.1, D 3.2	
Screen capture of list of TMDLs for WRIA in which unit is found (from web)	D 3.3	

Riverine Wetlands

Map of:	To answer questions:	Figure #
Cowardin plant classes	H 1.1, H 1.4	1
Hydroperiods	H 1.2	1
Ponded depressions	R 1.1	1
Boundary of area within 150 ft of the wetland *(can be added to another figure)*	R 2.4	1
Plant cover of trees, shrubs, and herbaceous plants	R 1.2, R 4.2	1
Width of unit vs. width of stream *(can be added to another figure)*	R 4.1	1
Map of the contributing basin	R 2.2, R 2.3, R 5.2	2
1 km Polygon: Area that extends 1 km from entire wetland edge - including polygons for accessible habitat and undisturbed habitat	H 2.1, H 2.2, H 2.3	3
Screen capture of map of 303(d) listed waters in basin (from Ecology website)	R 3.1	4
Screen capture of list of TMDLs for WRIA in which unit is found (from web)	R 3.2, R 3.3	5

Lake Fringe Wetlands

Map of:	To answer questions:	Figure #
Cowardin plant classes	L 1.1, L 4.1, H 1.1, H 1.4	
Plant cover of trees, shrubs, and herbaceous plants	L 1.2	
Boundary of area within 150 ft of the wetland *(can be added to another figure)*	L 2.2	
1 km Polygon: Area that extends 1 km from entire wetland edge - including polygons for accessible habitat and undisturbed habitat	H 2.1, H 2.2, H 2.3	
Screen capture of map of 303(d) listed waters in basin (from Ecology website)	L 3.1, L 3.2	
Screen capture of list of TMDLs for WRIA in which unit is found (from web)	L 3.3	

Slope Wetlands

Map of:	To answer questions:	Figure #
Cowardin plant classes	H 1.1, H 1.4	
Hydroperiods	H 1.2	
Plant cover of **dense** trees, shrubs, and herbaceous plants	S 1.3	
Plant cover of **dense, rigid** trees, shrubs, and herbaceous plants (*can be added to figure above)*	S 4.1	
Boundary of 150 ft buffer (can be added to another figure)	S 2.1, S 5.1	
1 km Polygon: Area that extends 1 km from entire wetland edge - including polygons for accessible habitat and undisturbed habitat	H 2.1, H 2.2, H 2.3	
Screen capture of map of 303(d) listed waters in basin (from Ecology website)	S 3.1, S 3.2	
Screen capture of list of TMDLs for WRIA in which unit is found (from web)	S 3.3	

Wetland name or number __A___

HGM Classification of Wetlands in Western Washington

For questions 1-7, the criteria described must apply to the entire unit being rated.

If the hydrologic criteria listed in each question do not apply to the entire unit being rated, you probably have a unit with multiple HGM classes. In this case, identify which hydrologic criteria in questions 1-7 apply, and go to Question 8.

1. Are the water levels in the entire unit usually controlled by tides except during floods?

   NO – go to 2 **YES** – the wetland class is **Tidal Fringe** – go to 1.1

   1.1 Is the salinity of the water during periods of annual low flow below 0.5 ppt (parts per thousand)?

   NO – Saltwater Tidal Fringe (Estuarine) **YES – Freshwater Tidal Fringe**
   *If your wetland can be classified as a Freshwater Tidal Fringe use the forms for **Riverine** wetlands. If it is Saltwater Tidal Fringe it is an **Estuarine** wetland and is not scored. This method **cannot** be used to score functions for estuarine wetlands.*

2. The entire wetland unit is flat and precipitation is the only source (>90%) of water to it. Groundwater and surface water runoff are NOT sources of water to the unit.

   NO – go to 3 **YES** – The wetland class is **Flats**
   *If your wetland can be classified as a Flats wetland, use the form for **Depressional** wetlands.*

3. Does the entire wetland unit **meet all** of the following criteria?
   ___The vegetated part of the wetland is on the shores of a body of permanent open water (without any plants on the surface at any time of the year) at least 20 ac (8 ha) in size;
   ___At least 30% of the open water area is deeper than 6.6 ft (2 m).

   NO – go to 4 **YES –** The wetland class is **Lake Fringe** (Lacustrine Fringe)

4. Does the entire wetland unit **meet all** of the following criteria?
   ___The wetland is on a slope (*slope can be very gradual*),
   ___The water flows through the wetland in one direction (unidirectional) and usually comes from seeps. It may flow subsurface, as sheetflow, or in a swale without distinct banks,
   ___The water leaves the wetland **without being impounded**.

   NO – go to 5 **YES –** The wetland class is **Slope**

   NOTE: Surface water does not pond in these type of wetlands except occasionally in very small and shallow depressions or behind hummocks (depressions are usually <3 ft diameter and less than 1 ft deep).

5. Does the entire wetland unit **meet all** of the following criteria?
   __x_The unit is in a valley, or stream channel, where it gets inundated by overbank flooding from that stream or river,
   __x__The overbank flooding occurs at least once every 2 years.

Wetland name or number __A___

NO – go to 6 **YES** – The wetland class is **Riverine**

NOTE: The Riverine unit can contain depressions that are filled with water when the river is not flooding

6. Is the entire wetland unit in a topographic depression in which water ponds, or is saturated to the surface, at some time during the year? *This means that any outlet, if present, is higher than the interior of the wetland.*

NO – go to 7 **YES** – The wetland class is **Depressional**

7. Is the entire wetland unit located in a very flat area with no obvious depression and no overbank flooding? The unit does not pond surface water more than a few inches. The unit seems to be maintained by high groundwater in the area. The wetland may be ditched, but has no obvious natural outlet.

NO – go to 8 **YES** – The wetland class is **Depressional**

8. Your wetland unit seems to be difficult to classify and probably contains several different HGM classes. For example, seeps at the base of a slope may grade into a riverine floodplain, or a small stream within a Depressional wetland has a zone of flooding along its sides. GO BACK AND IDENTIFY WHICH OF THE HYDROLOGIC REGIMES DESCRIBED IN QUESTIONS 1-7 APPLY TO DIFFERENT AREAS IN THE UNIT (make a rough sketch to help you decide). Use the following table to identify the appropriate class to use for the rating system if you have several HGM classes present within the wetland unit being scored.

NOTE: Use this table only if the class that is recommended in the second column represents 10% or more of the total area of the wetland unit being rated. If the area of the HGM class listed in column 2 is less than 10% of the unit; classify the wetland using the class that represents more than 90% of the total area.

HGM classes within the wetland unit being rated	HGM class to use in rating
Slope + Riverine	Riverine
Slope + Depressional	Depressional
Slope + Lake Fringe	Lake Fringe
Depressional + Riverine along stream within boundary of depression	Depressional
Depressional + Lake Fringe	Depressional
Riverine + Lake Fringe	Riverine
Salt Water Tidal Fringe and any other class of freshwater wetland	Treat as ESTUARINE

*If you are still unable to determine which of the above criteria apply to your wetland, or if you have **more than 2 HGM classes** within a wetland boundary, classify the wetland as Depressional for the rating.*

Wetland name or number A

RIVERINE AND FRESHWATER TIDAL FRINGE WETLANDS

Water Quality Functions - Indicators that the site functions to improve water quality

R 1.0. Does the site have the potential to improve water quality?	
R 1.1. Area of surface depressions within the Riverine wetland that can trap sediments during a flooding event: Depressions cover > 3/4 area of wetland — points = 8 Depressions cover > ½ area of wetland — points = 4 Depressions present but cover < ½ area of wetland — points = 2 No depressions present — points = 0	2
R 1.2. Structure of plants in the wetland (areas with >90% cover at person height, **not** Cowardin classes) Trees or shrubs > 2/3 area of the wetland — points = 8 Trees or shrubs > 1/3 area of the wetland — points = 6 Herbaceous plants (> 6 in high) > 2/3 area of the wetland — points = 6 Herbaceous plants (> 6 in high) > 1/3 area of the wetland — points = 3 Trees, shrubs, and ungrazed herbaceous < 1/3 area of the wetland — points = 0	8
Total for R 1 — Add the points in the boxes above	10

Rating of Site Potential If score is: ___**12-16 = H** X **6-11 = M** ___**0-5 = L** *Record the rating on the first page*

R 2.0. Does the landscape have the potential to support the water quality function of the site?	
R 2.1. Is the wetland within an incorporated city or within its UGA? Yes = 2 No = 0	2
R 2.2. Does the contributing basin to the wetland include a UGA or incorporated area? Yes = 1 No = 0	1
R 2.3. Does at least 10% of the contributing basin contain tilled fields, pastures, or forests that have been clearcut within the last 5 years? Yes = 1 No = 0	0
R 2.4. Is > 10% of the area within 150 ft of the wetland in land uses that generate pollutants? Yes = 1 No = 0	1
R 2.5. Are there other sources of pollutants coming into the wetland that are not listed in questions R 2.1-R 2.4 Other sources _____ Yes = 1 No = 0	0
Total for R 2 — Add the points in the boxes above	4

Rating of Landscape Potential If score is: X **3-6 = H** ___**1 or 2 = M** ___**0 = L** *Record the rating on the first page*

R 3.0. Is the water quality improvement provided by the site valuable to society?	
R 3.1. Is the wetland along a stream or river that is on the 303(d) list or on a tributary that drains to one within 1 mi? Yes = 1 No = 0	1
R 3.2. Is the wetland along a stream or river that has TMDL limits for nutrients, toxics, or pathogens? Yes = 1 No = 0	1
R 3.3. Has the site been identified in a watershed or local plan as important for maintaining water quality? (*answer YES if there is a TMDL for the drainage in which the unit is found*) Yes = 2 No = 0	2
Total for R 3 — Add the points in the boxes above	4

Rating of Value If score is: X **2-4 = H** ___**1 = M** ___**0 = L** *Record the rating on the first page*

Wetland name or number __A__

RIVERINE AND FRESHWATER TIDAL FRINGE WETLANDS

Hydrologic Functions - Indicators that site functions to reduce flooding and stream erosion

R 4.0. Does the site have the potential to reduce flooding and erosion?		
R 4.1. Characteristics of the overbank storage the wetland provides: *Estimate the average width of the wetland perpendicular to the direction of the flow and the width of the stream or river channel (distance between banks). Calculate the ratio: (average width of wetland)/(average width of stream between banks).* If the ratio is more than 20	points = 9	6
If the ratio is 10-20	points = 6	
If the ratio is 5-<10	points = 4	
If the ratio is 1-<5	points = 2	
If the ratio is < 1	points = 1	
R 4.2. Characteristics of plants that slow down water velocities during floods: *Treat large woody debris as forest or shrub. Choose the points appropriate for the best description (polygons need to have >90% cover at person height. These are NOT Cowardin classes).* Forest or shrub for > $^1/_3$ area OR emergent plants > $^2/_3$ area	points = 7	7
Forest or shrub for > $^1/_{10}$ area OR emergent plants > $^1/_3$ area	points = 4	
Plants do not meet above criteria	points = 0	
Total for R 4	Add the points in the boxes above	13

Rating of Site Potential If score is: __x__ **12-16 = H** ___ **6-11 = M** ___ **0-5 = L** *Record the rating on the first page*

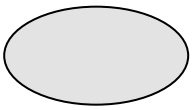
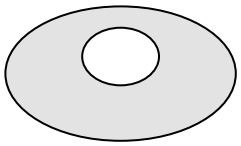
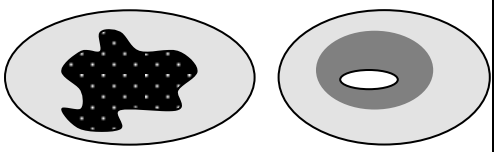
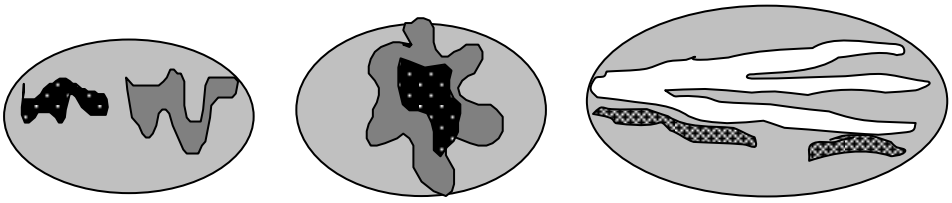
R 5.0. Does the landscape have the potential to support the hydrologic functions of the site?		
R 5.1. Is the stream or river adjacent to the wetland downcut?	Yes = 0 No = 1	1
R 5.2. Does the up-gradient watershed include a UGA or incorporated area?	Yes = 1 No = 0	1
R 5.3. Is the up-gradient stream or river controlled by dams?	Yes = 0 No = 1	1
Total for R 5	Add the points in the boxes above	3

Rating of Landscape Potential If score is: __x__ **3 = H** ___ **1 or 2 = M** ___ **0 = L** *Record the rating on the first page*

R 6.0. Are the hydrologic functions provided by the site valuable to society?		
R 6.1. Distance to the nearest areas downstream that have flooding problems? *Choose the description that best fits the site*. The sub-basin immediately down-gradient of the wetland has flooding problems that result in damage to human or natural resources (e.g., houses or salmon redds)	points = 2	1
Surface flooding problems are in a sub-basin farther down-gradient	points = 1	
No flooding problems anywhere downstream	points = 0	
R 6.2. Has the site been identified as important for flood storage or flood conveyance in a regional flood control plan?	Yes = 2 No = 0	2
Total for R 6	Add the points in the boxes above	3

Rating of Value If score is: __x__ **2-4 = H** ___ **1 = M** ___ **0 = L** *Record the rating on the first page*

Wetland name or number __A_

These questions apply to wetlands of all HGM classes. **HABITAT FUNCTIONS** - Indicators that site functions to provide important habitat	
H 1.0. Does the site have the potential to provide habitat?	
H 1.1. Structure of plant community: *Indicators are Cowardin classes and strata within the Forested class.* Check the Cowardin plant classes in the wetland. *Up to 10 patches may be combined for each class to meet the threshold of ¼ ac or more than 10% of the unit if it is smaller than 2.5 ac. Add the number of structures checked.* ____Aquatic bed — 4 structures or more: points = 4 ____Emergent — 3 structures: points = 2 ____Scrub-shrub (areas where shrubs have > 30% cover) — 2 structures: points = 1 __x__Forested (areas where trees have > 30% cover) — 1 structure: points = 0 *If the unit has a Forested class, check if:* __x__The Forested class has 3 out of 5 strata (canopy, sub-canopy, shrubs, herbaceous, moss/ground-cover) that each cover 20% within the Forested polygon	1
H 1.2. Hydroperiods Check the types of water regimes (hydroperiods) present within the wetland. The water regime has to cover more than 10% of the wetland or ¼ ac to count (*see text for descriptions of hydroperiods*). ____Permanently flooded or inundated — 4 or more types present: points = 3 __x__Seasonally flooded or inundated — 3 types present: points = 2 ____Occasionally flooded or inundated — 2 types present: points = 1 __x__Saturated only — 1 type present: points = 0 __x__Permanently flowing stream or river in, or adjacent to, the wetland ____Seasonally flowing stream in, or adjacent to, the wetland ____**Lake Fringe wetland** — **2 points** ____**Freshwater tidal wetland** — **2 points**	2
H 1.3. Richness of plant species Count the number of plant species in the wetland that cover at least 10 ft^2. *Different patches of the same species can be combined to meet the size threshold and you do not have to name the species.* ***Do not include Eurasian milfoil, reed canarygrass, purple loosestrife, Canadian thistle*** If you counted: > 19 species — points = 2 5 - 19 species — points = 1 < 5 species — points = 0	1
H 1.4. Interspersion of habitats Decide from the diagrams below whether interspersion among Cowardin plants classes (described in H 1.1), or the classes and unvegetated areas (can include open water or mudflats) is high, moderate, low, or none. *If you have four or more plant classes or three classes and open water, the rating is always high.*  **None** = 0 points  **Low** = 1 point  **Moderate** = 2 points All three diagrams in this row are **HIGH** = 3points 	0

Wetland name or number __A__

H 1.5. Special habitat features: Check the habitat features that are present in the wetland. *The number of checks is the number of points.* __x__Large, downed, woody debris within the wetland (> 4 in diameter and 6 ft long). __x__Standing snags (dbh > 4 in) within the wetland ____Undercut banks are present for at least 6.6 ft (2 m) **and/or** overhanging plants extends at least 3.3 ft (1 m) over a stream (or ditch) in, or contiguous with the wetland, for at least 33 ft (10 m) __Stable steep banks of fine material that might be used by beaver or muskrat for denning (> 30 degree slope) OR signs of recent beaver activity are present *(cut shrubs or trees that have not yet weathered where wood is exposed)* ____At least ¼ ac of thin-stemmed persistent plants or woody branches are present in areas that are permanently or seasonally inundated *(structures for egg-laying by amphibians)* ____Invasive plants cover less than 25% of the wetland area in every stratum of plants (*see H 1.1 for list of strata*)	2
Total for H 1 Add the points in the boxes above	6

Rating of Site Potential If score is:___**15-18 = H** ___**7-14 = M** __x__**0-6 = L** *Record the rating on the first page*

H 2.0. Does the landscape have the potential to support the habitat functions of the site?	
H 2.1. Accessible habitat (include *only habitat that directly abuts wetland unit*). *Calculate:* % undisturbed habitat 30 **+** [(% moderate and low intensity land uses)/2] 5 **=** 35 % If total accessible habitat is: > 1/3 (33.3%) of 1 km Polygon points = 3 20-33% of 1 km Polygon points = 2 10-19% of 1 km Polygon points = 1 < 10% of 1 km Polygon points = 0	1
H 2.2. Undisturbed habitat in 1 km Polygon around the wetland. *Calculate:* % undisturbed habitat 30 **+** [(% moderate and low intensity land uses)/2] 5 **=** 35 % Undisturbed habitat > 50% of Polygon points = 3 Undisturbed habitat 10-50% and in 1-3 patches points = 2 Undisturbed habitat 10-50% and > 3 patches points = 1 Undisturbed habitat < 10% of 1 km Polygon points = 0	1
H 2.3. Land use intensity in 1 km Polygon: If > 50% of 1 km Polygon is high intensity land use points = (- 2) ≤ 50% of 1 km Polygon is high intensity points = 0	0
Total for H 2 Add the points in the boxes above	2

Rating of Landscape Potential If score is**:** **4-6 = H** __x__**1-3 = M** ___**< 1 = L** *Record the rating on the first page*

H 3.0. Is the habitat provided by the site valuable to society?	
H 3.1. Does the site provide habitat for species valued in laws, regulations, or policies? *Choose only the highest score that applies to the wetland being rated.* Site meets ANY of the following criteria: points = 2 __X__ It has 3 or more priority habitats within 100 m (see next page) __X__ It provides habitat for Threatened or Endangered species (any plant or animal on the state or federal lists) ___ It is mapped as a location for an individual WDFW priority species ___ It is a Wetland of High Conservation Value as determined by the Department of Natural Resources __X__ It has been categorized as an important habitat site in a local or regional comprehensive plan, in a Shoreline Master Plan, or in a watershed plan Site has 1 or 2 priority habitats (listed on next page) within 100 m points = 1 Site does not meet any of the criteria above points = 0	2

Rating of Value If score is:__x__**2 = H** ___**1 = M** ___**0 = L** *Record the rating on the first page*

Wetland name or number A

WDFW Priority Habitats

Priority habitats listed by WDFW (see complete descriptions of WDFW priority habitats, and the counties in which they can be found, in: Washington Department of Fish and Wildlife. 2008. Priority Habitat and Species List. Olympia, Washington. 177 pp. http://wdfw.wa.gov/publications/00165/wdfw00165.pdf or access the list from here: http://wdfw.wa.gov/conservation/phs/list/)

Count how many of the following priority habitats are within 330 ft (100 m) of the wetland unit: ***NOTE:*** *This question is independent of the land use between the wetland unit and the priority habitat.*

— **Aspen Stands:** Pure or mixed stands of aspen greater than 1 ac (0.4 ha).

— **Biodiversity Areas and Corridors**: Areas of habitat that are relatively important to various species of native fish and wildlife (*full descriptions in WDFW PHS report*).

— **Herbaceous Balds:** Variable size patches of grass and forbs on shallow soils over bedrock.

— **Old-growth/Mature forests:** Old-growth west of Cascade crest – Stands of at least 2 tree species, forming a multi-layered canopy with occasional small openings; with at least 8 trees/ac (20 trees/ha) > 32 in (81 cm) dbh or > 200 years of age. Mature forests – Stands with average diameters exceeding 21 in (53 cm) dbh; crown cover may be less than 100%; decay, decadence, numbers of snags, and quantity of large downed material is generally less than that found in old-growth; 80-200 years old west of the Cascade crest.

— **Oregon White Oak:** Woodland stands of pure oak or oak/conifer associations where canopy coverage of the oak component is important (*full descriptions in WDFW PHS report p. 158 – see web link above*).

x **Riparian**: The area adjacent to aquatic systems with flowing water that contains elements of both aquatic and terrestrial ecosystems which mutually influence each other.

— **Westside Prairies:** Herbaceous, non-forested plant communities that can either take the form of a dry prairie or a wet prairie (*full descriptions in WDFW PHS report p. 161 – see web link above*).

x **Instream:** The combination of physical, biological, and chemical processes and conditions that interact to provide functional life history requirements for instream fish and wildlife resources.

— **Nearshore**: Relatively undisturbed nearshore habitats. These include Coastal Nearshore, Open Coast Nearshore, and Puget Sound Nearshore. (*full descriptions of habitats and the definition of relatively undisturbed are in WDFW report – see web link on previous page).*

— **Caves:** A naturally occurring cavity, recess, void, or system of interconnected passages under the earth in soils, rock, ice, or other geological formations and is large enough to contain a human.

— **Cliffs:** Greater than 25 ft (7.6 m) high and occurring below 5000 ft elevation.

— **Talus:** Homogenous areas of rock rubble ranging in average size 0.5 - 6.5 ft (0.15 - 2.0 m), composed of basalt, andesite, and/or sedimentary rock, including riprap slides and mine tailings. May be associated with cliffs.

X **Snags and Logs:** Trees are considered snags if they are dead or dying and exhibit sufficient decay characteristics to enable cavity excavation/use by wildlife. Priority snags have a diameter at breast height of > 20 in (51 cm) in western Washington and are > 6.5 ft (2 m) in height. Priority logs are > 12 in (30 cm) in diameter at the largest end, and > 20 ft (6 m) long.

Note: All vegetated wetlands are by definition a priority habitat but are not included in this list because they are addressed elsewhere.

Wetland name or number A

CATEGORIZATION BASED ON SPECIAL CHARACTERISTICS

Wetland Type *Check off any criteria that apply to the wetland. Circle the category when the appropriate criteria are met.*	**Category**
SC 1.0. Estuarine wetlands Does the wetland meet the following criteria for Estuarine wetlands? — The dominant water regime is tidal, — Vegetated, and — With a salinity greater than 0.5 ppt Yes –Go to **SC 1.1** No= **Not an estuarine wetland**	
SC 1.1. Is the wetland within a National Wildlife Refuge, National Park, National Estuary Reserve, Natural Area Preserve, State Park or Educational, Environmental, or Scientific Reserve designated under WAC 332-30-151? Yes = **Category I** (No) - Go to **SC 1.2**	**Cat. I**
SC 1.2. Is the wetland unit at least 1 ac in size and meets at least two of the following three conditions? — The wetland is relatively undisturbed (has no diking, ditching, filling, cultivation, grazing, and has less than 10% cover of non-native plant species. (If non-native species are *Spartina*, see page 25) — At least ¾ of the landward edge of the wetland has a 100 ft buffer of shrub, forest, or un-grazed or un-mowed grassland. — The wetland has at least two of the following features: tidal channels, depressions with open water, or contiguous freshwater wetlands. Yes = **Category I** (No) = **Category II**	**Cat. I** **Cat. II**
SC 2.0. Wetlands of High Conservation Value (WHCV) SC 2.1. Has the WA Department of Natural Resources updated their website to include the list of Wetlands of High Conservation Value? Yes – Go to **SC 2.2** (No) – Go to **SC 2.3** SC 2.2. Is the wetland listed on the WDNR database as a Wetland of High Conservation Value? Yes = **Category I** No = **Not a WHCV** SC 2.3. Is the wetland in a Section/Township/Range that contains a Natural Heritage wetland? http://www1.dnr.wa.gov/nhp/refdesk/datasearch/wnhpwetlands.pdf Yes **– Contact WNHP/WDNR and go to SC 2.4** (No) **= Not a WHCV** SC 2.4. Has WDNR identified the wetland within the S/T/R as a Wetland of High Conservation Value and listed it on their website? Yes = **Category I** (No) **= Not a WHCV**	**Cat. I**
SC 3.0. Bogs Does the wetland (or any part of the unit) meet both the criteria for soils and vegetation in bogs? *Use the key below.* ***If you answer YES you will still need to rate the wetland based on its functions.*** SC 3.1. Does an area within the wetland unit have organic soil horizons, either peats or mucks, that compose 16 in or more of the first 32 in of the soil profile? Yes – Go to **SC 3.3** (No) – Go to **SC 3.2** SC 3.2. Does an area within the wetland unit have organic soils, either peats or mucks, that are less than 16 in deep over bedrock, or an impermeable hardpan such as clay or volcanic ash, or that are floating on top of a lake or pond? Yes – Go to **SC 3.3** (No) = **Is not a bog** SC 3.3. Does an area with peats or mucks have more than 70% cover of mosses at ground level, AND at least a 30% cover of plant species listed in Table 4? Yes = **Is a Category I bog** No – Go to **SC 3.4** **NOTE:** If you are uncertain about the extent of mosses in the understory, you may substitute that criterion by measuring the pH of the water that seeps into a hole dug at least 16 in deep. If the pH is less than 5.0 and the plant species in Table 4 are present, the wetland is a bog. SC 3.4. Is an area with peats or mucks forested (> 30% cover) with Sitka spruce, subalpine fir, western red cedar, western hemlock, lodgepole pine, quaking aspen, Engelmann spruce, or western white pine, AND any of the species (or combination of species) listed in Table 4 provide more than 30% of the cover under the canopy? Yes = **Is a Category I bog** (No) **= Is not a bog**	**Cat. I**

Wetland name or number _____

SC 4.0. Forested Wetlands Does the wetland have at least 1 contiguous acre of forest that meets one of these criteria for the WA Department of Fish and Wildlife's forests as priority habitats? ***If you answer YES you will still need to rate the wetland based on its functions.*** — **Old-growth forests** (west of Cascade crest): Stands of at least two tree species, forming a multi-layered canopy with occasional small openings; with at least 8 trees/ac (20 trees/ha) that are at least 200 years of age OR have a diameter at breast height (dbh) of 32 in (81 cm) or more. — **Mature forests** (west of the Cascade Crest): Stands where the largest trees are 80- 200 years old OR the species that make up the canopy have an average diameter (dbh) exceeding 21 in (53 cm). Yes = **Category I** (No) = **Not a forested wetland for this section**	**Cat. I**
SC 5.0. Wetlands in Coastal Lagoons Does the wetland meet all of the following criteria of a wetland in a coastal lagoon? — The wetland lies in a depression adjacent to marine waters that is wholly or partially separated from marine waters by sandbanks, gravel banks, shingle, or, less frequently, rocks — The lagoon in which the wetland is located contains ponded water that is saline or brackish (> 0.5 ppt) during most of the year in at least a portion of the lagoon *(needs to be measured near the bottom)* Yes – Go to **SC 5.1** (No) = **Not a wetland in a coastal lagoon** SC 5.1. Does the wetland meet all of the following three conditions? — The wetland is relatively undisturbed (has no diking, ditching, filling, cultivation, grazing), and has less than 20% cover of aggressive, opportunistic plant species (see list of species on p. 100). — At least ¾ of the landward edge of the wetland has a 100 ft buffer of shrub, forest, or un-grazed or un-mowed grassland. — The wetland is larger than $^{1}/_{10}$ ac (4350 ft^2) Yes = **Category I** (No) = **Category II**	**Cat. I** **Cat. II**
SC 6.0. Interdunal Wetlands Is the wetland west of the 1889 line (also called the Western Boundary of Upland Ownership or WBUO)? ***If you answer yes you will still need to rate the wetland based on its habitat functions.*** In practical terms that means the following geographic areas: — Long Beach Peninsula: Lands west of SR 103 — Grayland-Westport: Lands west of SR 105 — Ocean Shores-Copalis: Lands west of SR 115 and SR 109 Yes – Go to **SC 6.1** (No) = **not an interdunal wetland for rating** SC 6.1. Is the wetland 1 ac or larger and scores an 8 or 9 for the habitat functions on the form (rates H,H,H or H,H,M for the three aspects of function)? Yes = **Category I** No – Go to **SC 6.2** SC 6.2. Is the wetland 1 ac or larger, or is it in a mosaic of wetlands that is 1 ac or larger? Yes = **Category II** No – Go to **SC 6.3** SC 6.3. Is the unit between 0.1 and 1 ac, or is it in a mosaic of wetlands that is between 0.1 and 1 ac? Yes = **Category III** No = **Category IV**	**Cat I** **Cat. II** **Cat. III** **Cat. IV**
Category of wetland based on Special Characteristics If you answered No for all types, enter "Not Applicable" on Summary Form	NA

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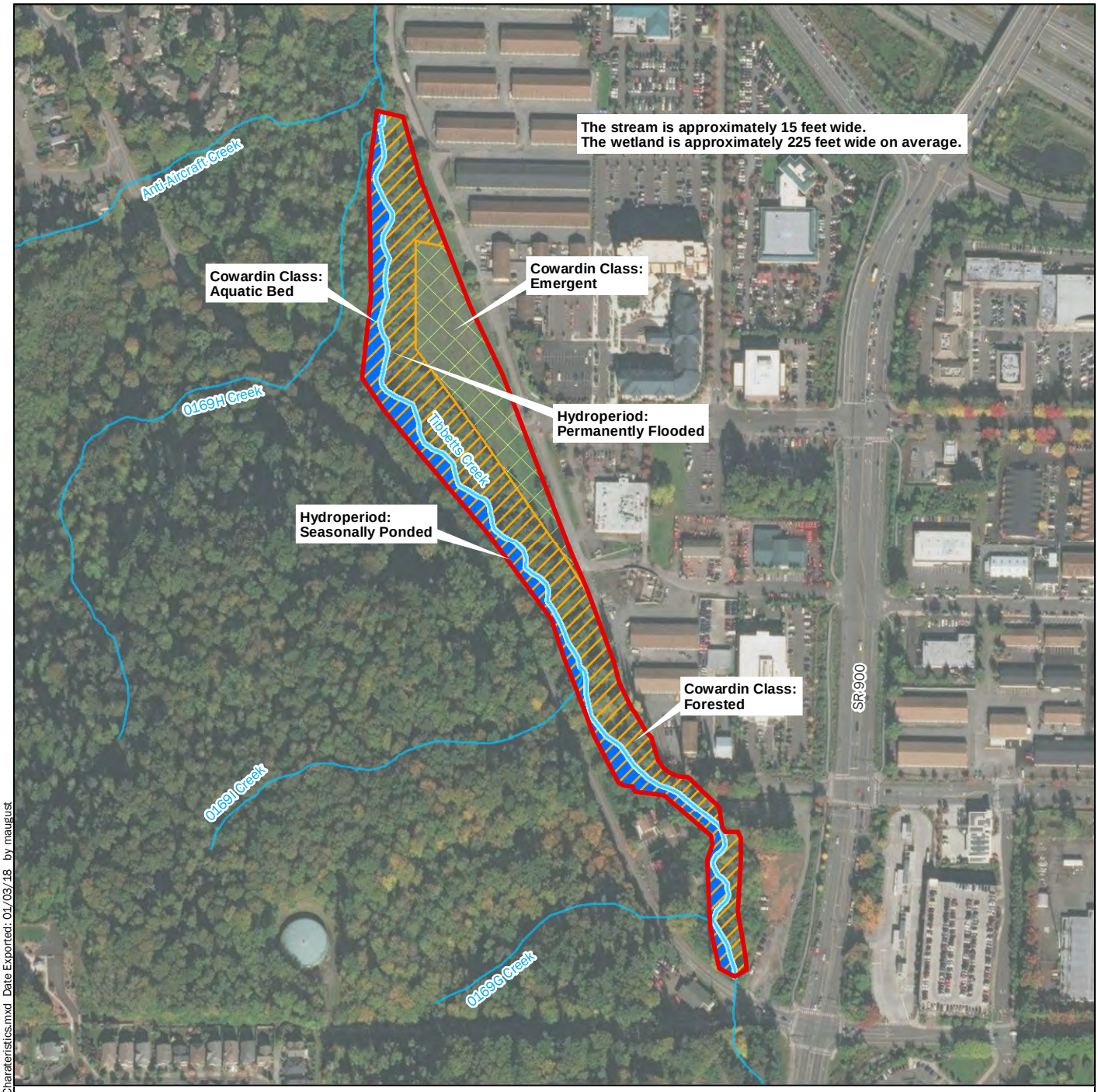

Legend

- Estimated Wetland Boundary
- Forest
- Emergent

400 0 400

Feet

N W E S

Notes:

1. The locations of all features shown are approximate.
2. This drawing is for information purposes. It is intended to assist in showing features discussed in an attached document. GeoEngineers, Inc. cannot guarantee the accuracy and content of electronic files. The master file is stored by GeoEngineers, Inc. and will serve as the official record of this communication.

Data Source: King County GIS, ESRI

Projection: NAD 1983 StatePlane Washington North FIPS 4601 Feet

Boundaries and Characteristics of Wetland A

Newport Way Improvements Project
Issaquah, Washington

GeoEngineers

Figure D-1

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Notes:

1. The locations of all features shown are approximate.
2. This drawing is for information purposes. It is intended to assist in showing features discussed in an attached document. GeoEngineers, Inc. cannot guarantee the accuracy and content of electronic files. The master file is stored by GeoEngineers, Inc. and will serve as the official record of this communication.

Data Source: King County GIS, ESRI

Projection: NAD 1983 StatePlane Washington North FIPS 4601 Feet

Legend

- Wetland A
- Undisturbed Habitat
- Accessible Habitat
- Buffer (150ft)
- Buffer (1km)

N W E S

1,000 0 1,000

Feet

Landscape Characteristics of Wetland A

Newport Way Improvements Project
Issaquah, Washington

GeoEngineers

Figure D-2

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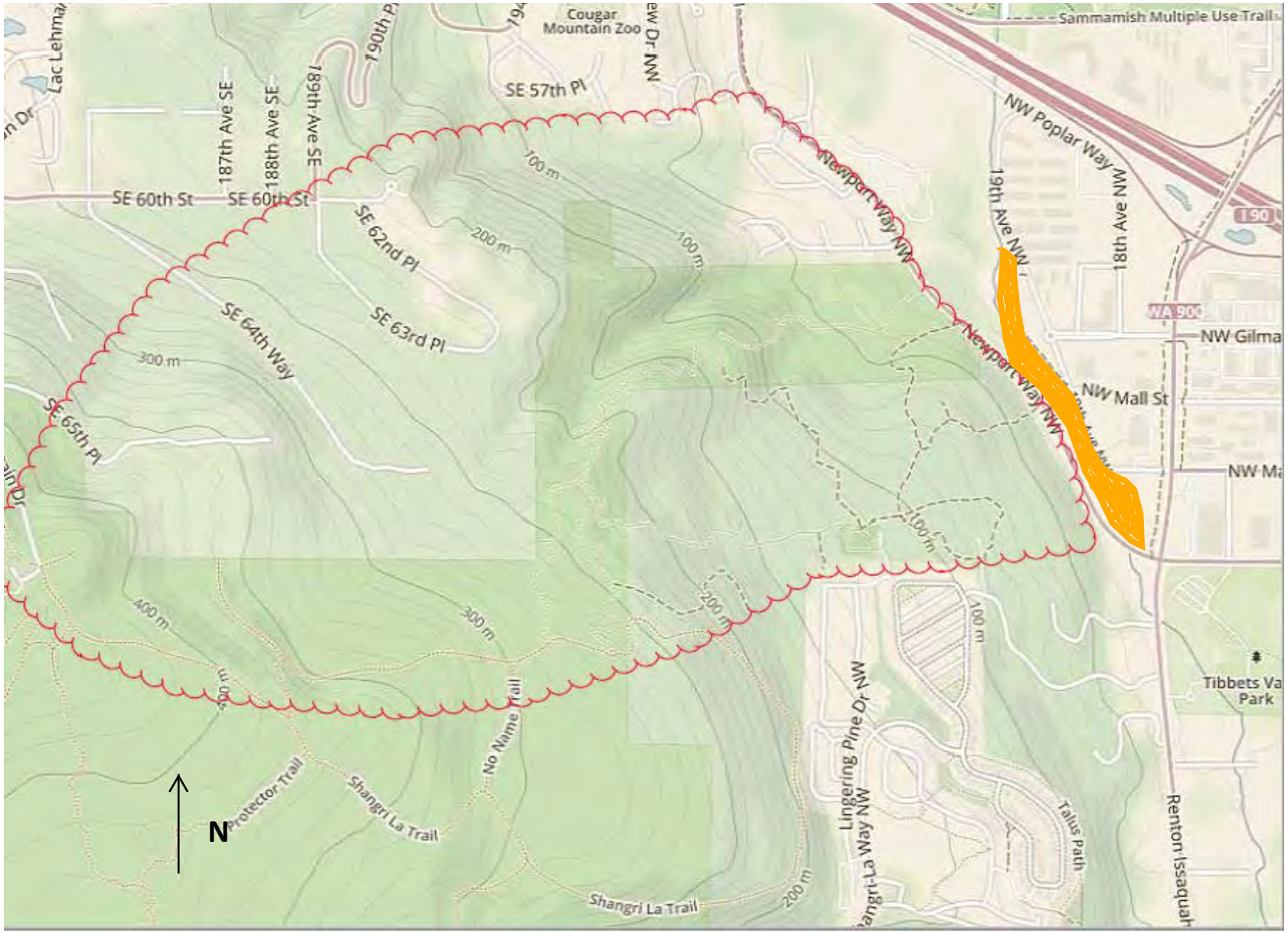
Legend

Wetland A

Contributing Basin

Figure D-3. Contributing Basin



The 303(d) List contains only Category 5 Listings.

View	ListingID	Assessment Unit ID	Medium	Parameter	Current Category	Waterbody Name	WRIA	WQ Improvement Project	WQ Atlas Map Link
View	4808	17110012000221	Water	Temperature	5	TIBBETTS CREEK	8 - Cedar-Sammamish		4808
View	12683	17110012000221	Water	Dissolved Oxygen	5	TIBBETTS CREEK	8 - Cedar-Sammamish		12683
View	15778	17110012000224	Water	Dissolved Oxygen	5	TIBBETTS CREEK	8 - Cedar-Sammamish		15778
View	15781	17110012000224	Water	Temperature	5	TIBBETTS CREEK	8 - Cedar-Sammamish		15781
View	70112	17110012000224	Other	Bioassessment	5	TIBBETTS CREEK	8 - Cedar-Sammamish		70112
View	13138	17110012000221	Water	Bacteria	4A	TIBBETTS CREEK	8 - Cedar-Sammamish	Issaquah Creek Basin Bacteria TMDL	13138
View	15779	17110012000224	Water	Bacteria	4A	TIBBETTS CREEK	8 - Cedar-Sammamish	Issaquah Creek Basin Bacteria TMDL	15779
View	13654	17110012000221	Water	Mercury	2	TIBBETTS CREEK	8 - Cedar-Sammamish		13654
View	13645	17110012000221	Water	Ammonia-N	1	TIBBETTS CREEK	8 - Cedar-Sammamish		13645
View	13646	17110012000221	Water	Arsenic	1	TIBBETTS CREEK	8 - Cedar-Sammamish		13646
View	13657	17110012000221	Water	Selenium	1	TIBBETTS CREEK	8 - Cedar-Sammamish		13657

303(d) Screen shot

Newport Way Improvements Project
Issaquah, Washington

GeoEngineers

Figure D-4

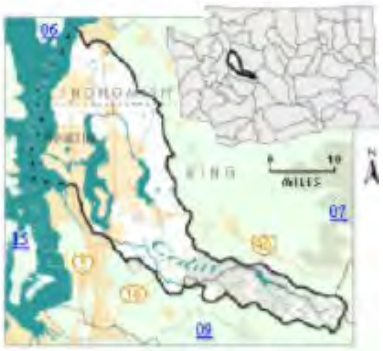
3663-022-00 Date Exported: 04/13/17

Water Quality Improvement Projects (TMDLs)

Water Quality Improvement > Water Quality Improvement Projects by WRIA > WRIA 8: Cedar-Sammamish

WRIA 8: Cedar-Sammamish

The following table lists overview information for water quality improvement projects (including total maximum daily loads, or TMDLs) for this water resource inventory area (WRIA). Please use links (where available) for more information on a project.



Counties

- King
- Snohomish

Waterbody Name	Pollutants	Status**	TMDL Lead
Ballinger Lake	Total Phosphorus	Approved by EPA	Tricia Shoblom 425-649-7288
Bear-Evans Creek Basin	Fecal Coliform	Approved by EPA	Joan Nolan 425-649-4425
	Dissolved Oxygen Temperature	Approved by EPA	
Cottage Lake	Total Phosphorus	Approved by EPA Has an implementation plan	Tricia Shoblom 425-649-7288
Issaquah Creek Basin	Fecal Coliform	Approved by EPA	Joan Nolan 425-649-4425
Little Bear Creek Tributaries: Trout Stream Great Dane Creek Cutthroat Creek	Fecal Coliform	Approved by EPA	Ralph Svrjcek 425-649-7036
North Creek	Fecal Coliform	Approved by EPA Has an implementation plan	Ralph Svrjcek 425-649-7036
Pipers Creek	Fecal Coliform	Approved by EPA	Joan Nolan 425-649-4425
Sammamish River	Dissolved Oxygen Temperature	Field work starts summer 2015	Ralph Svrjcek 425-649-7036
Swamp Creek	Fecal Coliform	Approved by EPA Has an implementation plan	Ralph Svrjcek 425-649-7036

Accessed at: http://web.archive.org/web/20170330212555/http://www.ecy.wa.gov:80/programs/wq/tmdl/TMDLsbyWria/tmdl-wria08.html

TMDL Screen Shot

Newport Way Improvements Project
Issaquah, Washington

GeoEngineers

Figure D-5

3663-022-00 Date Exported: 04/13/17

APPENDIX E
Wetland and Stream Descriptions

TABLE E-1. WETLAND A

Wetland A - Information		
Location	Approximately 30 feet east of Newport Way	 Looking northwest towards Wetland A; Newport Way above
WRIA	8 – Cedar-Sammamish	
Local Jurisdiction	King County	
Category/Rating	II (22 points)[1]	
Buffer Width	100 feet[2]	
Size	9.8 acres (estimated)	
Cowardin Class (Cowardin et al. 1979)	Palustrine Forested	
HGM Class	Riverine	
Data Forms	Appendix C: SPs 1-6	
Description Summary		
Vegetation	**Herbaceous:** Reed canarygrass (*Phalaris arundinacea*), common ladyfern (*Athyrium felix-femina*), slough sedge (*Carex obnupta*), field horsetail (*Equisetum arvense*) and skunk cabbage (*Lysichiton americanus*) **Shrub:** Salmonberry (*Rubus spectabilis*), willows (*Salix* spp.), Himalayan blackberry (*Rubus armeniacus*) and snowberry (*Symphoricarpos albus*) **Tree**: Red alder (*Alnus rubra*)	
Soils	Typically meets criteria for redox dark surface (F6) and/or loamy mucky mineral (F1).	
Hydrology	**Indicators:** Saturated to the surface, high groundwater table, geomorphic position, facultative (FAC)-neutral test. **Source:** Surface runoff, direct precipitation, high water table, overbank flooding from Tibbets Creek.	
Notes	Riparian wetland on downslope of Newport Way adjacent to Tibbetts Creek.	
Western Washington Wetland Rating Functions Summary (Appendix D – 22 points total)		
Water Quality	**7 points:** due to size, vegetation characteristics and coverage and position adjacent to the road (i.e. source of pollution).	
Hydrologic	**9 points:** due to ground position and ability to detain water that would otherwise flow to a stream that has flooding problems.	
Habitat	**6 points:** due to numerous vegetation communities, interspersion and habitat features	
Buffer Condition	Newport Way, an arterial with moderate traffic volume, is located within the wetland buffer to the south and west of the wetland. The buffer to the east and north is relatively undisturbed and consists of a coniferous and deciduous forest with a moderately dense shrub layer and a sparse herbaceous layer.	

Notes:

1. Wetland rating in accordance with Washington State Wetlands Rating System for Western Washington, (Hruby 2014).
2. IMC 18.10.640 based on characteristics of a forested wetland and a habitat rating score of 22 points. The final buffer width is subject to approval by the jurisdictional authority.

TABLE E-2. TIBBETTS CREEK

General Information	
Extent of Field Survey	This stream is located at the intersection of Newport Way approximately 200 feet west of SR 900. We characterized the upstream and downstream portions of the stream within the Area of Investigation.
WRIA	8 – Cedar-Sammamish
DNR Stream Type	F
IMC Stream Type	Class 2 Stream with Salmonids
Buffer Width	100 feet
Average Bankfull Width	20 feet
Duration	Perennial
Literature Reviewed	None
Description Summary	
Documented Fish Use	Winter steelhead, kokanee, coho, sockeye
Connectivity	Tibbetts Creek flows into Lake Sammamish, which flows into Lake Washington and ultimately connects to Puget Sound.
Channel Description	Channel consists of gravels and cobbles with sandy silt sediments.
Riparian/Buffer Condition	The buffer has been modified by development on adjacent properties for residential and business uses. Within the survey area, the buffer consists of narrow bands of forested and shrub vegetation. The forested areas are dominated red alder and bigleaf maple. The shrub and understory areas are typically dominated by Himalayan blackberry, with some salmonberry and reed canarygrass.
Existing culvert under Newport Way	There is an existing large box culvert at the crossing of Tibbetts under Newport Way.
Stormwater inputs	There were observed direct discharge points of stormwater into Tibbetts Creek.
Notes	Within this section of Tibbetts Creek, habitat and water quality functions have been degraded with invasive species dominant in the riparian buffer.

TABLE E-3. STREAM 0169G

General Information	
Extent of Field Survey	This stream is located approximately 500 feet west of the intersection of Newport Way and SR 900. We characterized the upstream and downstream portions of the stream within the Area of Investigation as well as extending approximately 650 feet upstream of the Newport Way crossing .
WRIA	8 – Cedar-Sammamish
Local Jurisdiction	King County
DNR Stream Type	NA (not mapped)
Local Jurisdiction Stream Type	Class 2 Stream with Salmonids
Buffer Width	100 feet
Average Bankfull Width	4 feet
Duration	Seasonal
Reference Studies	None
Description Summary	
Documented Fish Use	None
Connectivity	This tributary connects with Tibbets Creek. The existing road crossing is a fish passage barrier.
Channel Description	Downstream channel adjacent to the culvert is predominantly vegetated with grass and very limited substrate evident. Further downstream, the channel has been modified, including installation of pavers to harden the stream bank. Upstream portion of the channel was not clearly observed from ROW.
Riparian/Buffer Condition	The buffer is severely degraded and is extensively modified by the adjacent residence, including associated lawn areas. A large amount of debris and litter was observed throughout the buffer. The buffer consists of narrow bands of forested and shrub vegetation, with some areas that have been cleared and are now limited to grass and other herbaceous species. The forested areas are dominated by black cottonwood with some red alder and Pacific willow (*Salix lasiandra*). The shrub and understory areas are typically dominated by Himalayan blackberry and reed canarygrass.
Existing culvert under Newport Way	According to a 2017 Culvert Inventory (City of Issaquah 2017b) provided by City of Issaquah Public Works, this stream is conveyed under Newport Way through an 18-inch pipe culvert.
Stormwater inputs	Based on field observations, stormwater discharges untreated from the roadway directly into the downstream portion of this tributary.
Notes	The western portion of this stream, on the other side of Newport Way, was not delineated due to ROE limitations. This portion of the stream is within a predominantly undisturbed forested hillside.

TABLE E-4. STREAM 0169H

General Information	
Extent of Field Survey	This stream is located approximately 0.45 miles west of the intersection of Newport Way and SR 900 on King County owned property. The upstream portion of this property was characterized in the field. Observations of the downstream portion were limited to the ROW.
WRIA	8 – Cedar-Sammamish
DNR Stream Type	NA (not mapped)
IMC Stream Type	Class 2 Stream with Salmonids
Buffer Width	100 feet
Average Bankfull Width	8-9 feet
Duration	Seasonal
Reference Studies	None
Description Summary	
Documented Fish Use	None
Connectivity	The stream flows through a box culvert under Newport Way before connecting downstream with Tibbetts Creek. The culvert is a fish barrier.
Channel Description	Channel consists of large boulders, cobbles and gravels with very minor sandy silt sediments.
Riparian/Buffer Condition	This buffer is predominantly undisturbed with some elements of degradation with invasive species and litter from the roadway. The buffer consists of forested and shrub vegetation, with some areas that have been cleared and are now limited to grass and other herbaceous species. The forested areas are dominated by black cottonwood with some red alder and Pacific willow. The shrub and understory areas are typically dominated by Himalayan blackberry, with some snowberry (*Symphoricarpos albus*), salmonberry, reed canarygrass, English ivy (*Hedera helix*) and sword fern (*Polystichum munitum*).
Existing culvert under Newport Way	According to a 2017 Culvert Inventory (City of Issaquah 2017b) provided by City of Issaquah Public Works, this stream flows through a 36-inch reinforced concrete pipe under Newport Way.
Stormwater Inputs	Currently, stormwater flows untreated from the roadway into the stream.
Notes	Due to ROE constraints, the survey was limited to the upstream portion of the tributary. This tributary is located on King County parcel and part of the Cougar Mountain Regional Wildland Park.

TABLE E-5. STREAM 0169I

General Information	
Extent of Field Survey	This stream is located approximately 0.25 miles west of the intersection of Newport Way and SR 900. We characterized the upstream and downstream portions of the stream within the Area of Investigation as well as extending approximately 650 feet upstream of the Newport Way crossing .
WRIA	8 – Cedar-Sammamish
DNR Stream Type	NA (not mapped)
IMC Stream Type	Class 3
Buffer Width	50 feet
Average Bankfull Width	2-3 feet
Duration	Seasonal
Reference Studies	Bergsma Plan Set (Pace 2016), Stream 2 Survey (CEC 2016)
Description Summary	
Documented Fish Use	None
Connectivity	There is a pipe culvert under Newport Way; the downstream channel flows a short distance before entering Wetland A, through which there is no contiguous stream channel.
Channel Description	Downstream channel section enters wetland approximately 35 feet downstream of the culvert crossing. There is no contiguous channel through the wetland. Substrate is sand and gravel. Upstream channel section is steep and narrow, with sand and gravel dominant.
Riparian/Buffer Condition	This buffer is predominantly undisturbed, and vegetation is predominantly forested and shrub. The shrub and understory areas are typically dominated by Himalayan blackberry, with some snowberry (*Symphoricarpos albus*) and sword fern (*Polystichum munitum*).
Existing Culvert under Newport Way	According to a 2017 Culvert Inventory (City of Issaquah 2017b) provided by City of Issaquah Public Works, this culvert is 18-inch reinforced concrete pipe.
Stormwater Inputs	Currently, stormwater flows untreated from the roadway into the stream.
Notes	Survey was limited to the downstream portion of the tributary; upstream OHWM obtained from developer drawings.

TABLE E-6. ANTI-AIRCRAFT CREEK

General Information	
Extent of Field Survey	Anti-Aircraft is located approximately 200 feet south of intersection of Newport Way and NW Oakcrest Drive. Neither the upstream nor downstream portions of Anti-Aircraft Creek were included in our survey due to recent re-construction of the stream channel, resulting in absence of OHWM indicators.
WRIA	8 – Cedar-Sammamish
DNR Stream Type	F
IMC Stream Type	Class 2 Stream with Salmonids
Buffer Width	100 feet
Average Bankfull Width	Not characterized
Duration	Seasonal
Reference Studies	Culvert Replacement Project Design Drawings (PBS 2017)
Description Summary	
Documented Fish Use	Fall Chinook, coho, sockeye, winter steelhead
Connectivity	Connects with Tibbetts Creek downstream of Newport Way.
Riparian Buffer Condition	Vegetation has been disturbed and replaced as part of ongoing restoration activities.
Existing culvert under Newport Way	Based on 2017 Newport Culvert Inventory (City of Issaquah 2017b) provided by City of Issaquah Public Works, a 20-foot box culvert has been constructed to replace the prior 36-inch reinforced concrete pipe crossing.
Stormwater Inputs	Not assessed
Notes	This stream has undergoing recent restoration, including re-routing the channel and a new culvert crossing under Newport Way.

TABLE E-7. SCHNEIDER CREEK

General Information	
Extent of Survey	This stream is located approximately 0.84 miles west along Newport Way from the intersection of Newport Way and SR 900. Our field survey included both upstream and downstream portions within the Area of Investigation.
WRIA	8 – Cedar-Sammamish
DNR Stream Type	F
IMC Stream Type	Class 2 Stream with Salmonids
Buffer Width	100 feet
Average Bankfull Width	10 feet
Duration	Perennial
Reference Studies	Gateway Apartments Critical Areas Study (Talasaea 2014)
Description Summary	
Documented Fish Use	Cutthroat
Connectivity	Schneider Creek flows under Newport Way via a 3-foot round culvert and then ultimately into Lake Sammamish. The existing crossing is a total fish barrier.
Channel Description	Upstream substrate consists of cobbles, gravel and sand. Downstream channel contains some large cobbles at the culvert outlet and then transitions to gravels and cobbles.
Riparian/Buffer Condition	Above the culvert, the stream has a well-established forested riparian buffer with predominantly native species. There is an increase in invasive species within the riparian buffer as the stream gets closer to Newport Way. The forested areas are dominated by black cottonwood with some red alder and Pacific willow (*Salix lasiandra*). The shrub and understory areas are typically dominated by Himalayan blackberry, with some snowberry, salmonberry, reed canarygrass and sword fern. Below the culvert at Newport Way, the stream opens to a highly degraded riparian buffer adjacent to a residential property with lawn growing up to the bank of the stream. Beyond this property, the stream flows into a forested area dominated by black cottonwood with some red alder and Pacific willow. The shrub and understory areas are typically dominated by Himalayan blackberry, with some snowberry, salmonberry (*Rubus spectabilis*), reed canarygrass (*Phalaris arundinacea*) and sword fern (*Polystichum munitum*).
Existing Culvert under Newport Way	According to a 2017 Culvert Inventory (City of Issaquah 2017b) provided by City of Issaquah Public Works, this culvert is a 30-inch corrugated metal pipe.
Stormwater Inputs	Currently, stormwater flows untreated from the roadway into the channel.
Notes	Within this section of the stream, habitat and water quality functions have been degraded. There is little to no vegetated buffer downstream of Newport Way, and human use and alteration are evident.

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